ELECTRICAL WEST

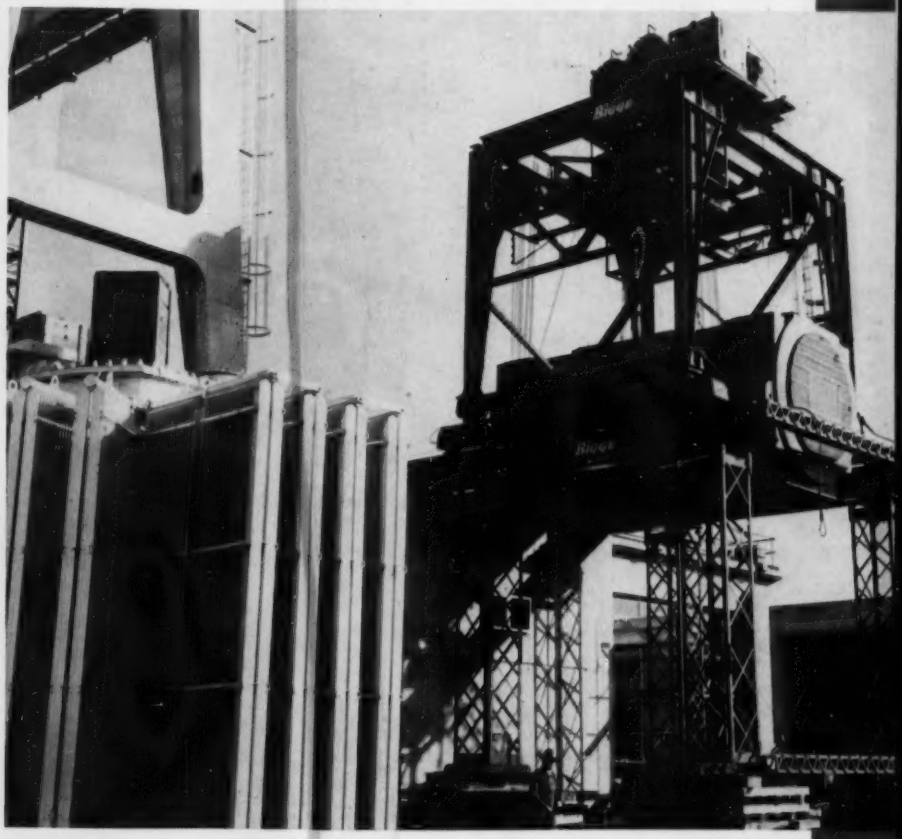
August 1954
25 Cents

SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED REGION OF THE U.S.

It's Cheaper on the Ground..... 63

Speed Relighting With a Gun..... 67

Fine Meeting—Slow Market..... 78



New Design, New Layout for Pittsburg..... 58

Tract Underground Costs Cut Up to One-Half..... 64

Puts You Where You Want to Be..... 66

San Diego G&E Sets New Example..... 68

Where Electricity Multiplies Floor Space..... 69

According to Her Own Hawaiian Recipe..... 85

Why Are We Losing This Business? . . 55

Come to think of it...

You'll love the life you lead...

ELECTRICALLY

Yes, it's love! That's the word to describe the feeling you'll have for the all-electric way of living. It's so convenient, so carefree, so effortless—and there's so much extra leisure time for you to enjoy every day.

The key to it? Simply use electricity in the many ways it can—and should—be used. Turn over all your deadly dull, distasteful, time-consuming chores to the pushbutton maid. It will make short work of them.

It's available right now—known among the happy homemakers who use it by a variety of names. Some call it "*modern* living." Others say "*electric* living." Others prefer "*California* living." But they're unanimous on one point: It's wonderful, and they love it. You will, too!

SOUTHERN CALIFORNIA E

Luxury costs so little...

everyone can have it—electrically!

WA

PAG

Practically everyone is i
And fortunately, luxurio
living.

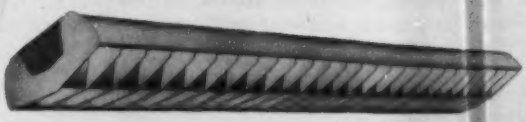
With full use of elect
have all the convenience, comfort and work-saving electric appliances to be found in the most lavish home anywhere.

Making this point is the chief purpose of these Edison advertisements. They are aimed at boosting the sale of appliances by reminding customers that real luxury living is available at low cost, through the magic of electricity. "Edison tells them, and the dealer sells them!"

Southern California Edison

SOUTHERN CALIFORNIA EDISON COMPANY

COLLEGIATE



168 TROFFER

INDUSTRO-LUX

SCHOOLS AND OFFICE BUILDINGS

FACTORIES

AVY GES

HOW GOOD LIGHTING PAYS DIVIDENDS

THESE ARE FACTS!

For parking lots, service stations and used car lots let us be the interpreter through this maze of engineering data. FS-52 1000 watt lamps used in a porcelain enameled reflector such as the "MASTER flood yield 17 beam lumens per watt. Far more than most other types of lighting. For the same energy cost you receive 70% MORE LIGHT with a SMOOT-HOLMAN "MASTER" floodlight than with other types. Less lamp changes required by using this "MASTER" flood rather than smaller wattages. For less than ½ the lamp cost you receive the same amount of light. THESE ARE COLD FACTS . . . ARE YOU GETTING LUMENS OR LEMONS? You can apply similar advantages to offices, schools and factories with SMOOT-HOLMAN QUALITY LIGHTING EQUIPMENT . . . THERE IS A DIFFERENCE.

FLOODLIGHT AREAS

STANDARD DOME

CLASSROOMS

EDUCATOR

SIGN OF QUALITY

SMOOT-HOLMAN

INGLEWOOD CALIFORNIA

SALES OFFICES IN MOST PRINCIPAL CITIES

OFFICE AND WAREHOUSE SAN FRANCISCO

Come to think of it...

You'll love the life you lead...
ELECTRICALLY
Yes, it's love! It's the word to describe the feeling you'll have for the all-electric way of living. It's so convenient, so carefree, so effortless—and there's so much extra leisure time for you to enjoy every day.
The key to it? Simply use electricity in the many ways it can—and should—be used. Turn over all your deadly dull, distasteful, time-consuming chores to the pushbutton maid. It will make short work of them.
It's available right now—known among the happy homemakers who use it by a variety of names. Some call it "modern living." Others say "electric living." Others prefer "California living." As you see, though, they're unanimous on one point: It's really living—and they love it. You will, too!
SOUTHERN CALIFORNIA EDISON COMPANY
Luxury costs so little...
everyone can have it—electrically!
Luxury has certainly come down in price since electricity was introduced! In fact, comfort and conveniences that people used to dream about have just about dropped out of the luxury class completely. They have become taken-for-granted items in everyone's everyday living.
Taking your ease while electric servants do the housework, for example, is commonplace. With electricity, you can relax while meals get cooked, clothes get washed, water gets heated—and any number of other things get done. You don't even think of it as luxury, chiefly because it's so inexpensive. You don't need a "luxury income" to buy electricity—it's today's biggest bargain.
Edison
SOUTHERN CALIFORNIA EDISON COMPANY

Practically everyone is in the market for "luxury living". And fortunately, luxurious living does *not* mean "expensive" living.

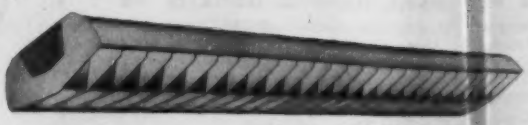
With full use of electric service the average home today can have all the convenience, comfort and work-saving electric appliances to be found in the most lavish home anywhere.

Making this point is the chief purpose of these Edison advertisements. They are aimed at boosting the sale of appliances by reminding customers that real luxury living is available at low cost, through the magic of electricity. "Edison tells them, and the dealer sells them!"

Southern California Edison

SOUTHERN CALIFORNIA EDISON COMPANY

COLLEGIATE



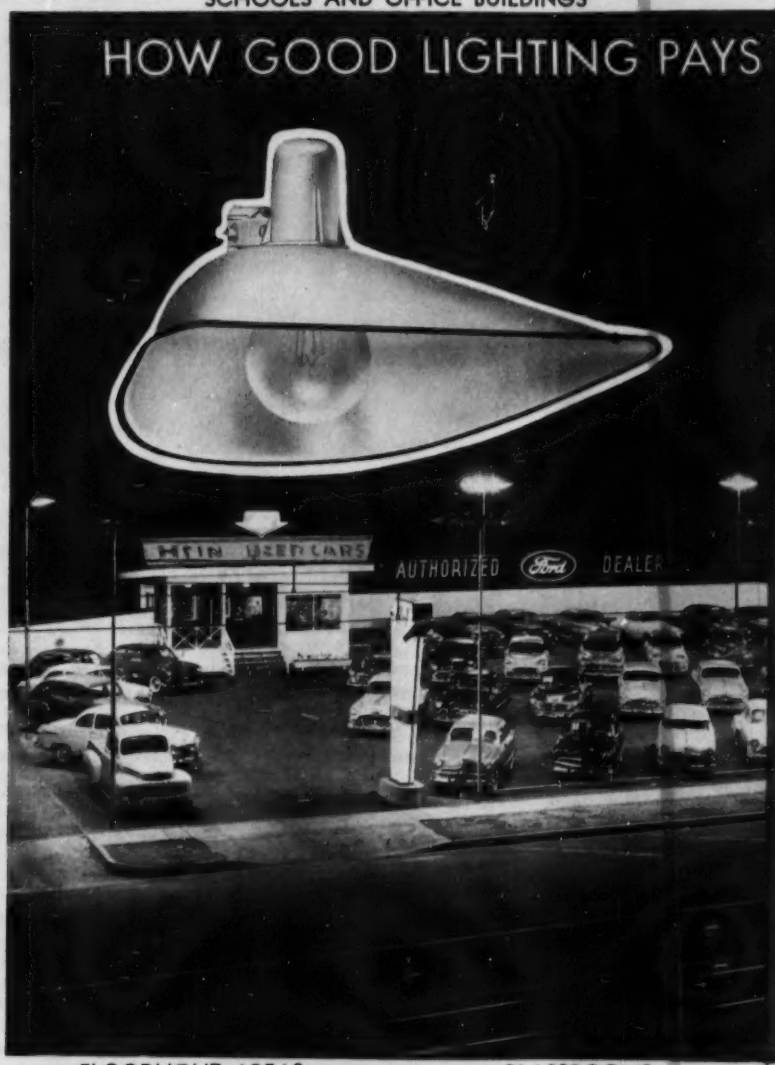
168 TROFFER

INDUSTRO-LUX

SCHOOLS AND OFFICE BUILDINGS

FACTORIES

HOW GOOD LIGHTING PAYS

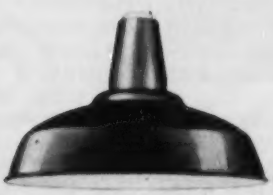


DIVIDENDS

THESE ARE FACTS!

For parking lots, service stations and used car lots let us be the interpreter through this maze of engineering data. PS-52 1000 watt lamps used in a porcelain enameled reflector such as the "MASTER flood yield 17 beam lumens per watt. For more than most other types of lighting. For the same energy cost you receive 70% MORE LIGHT with a SMOOT-HOLMAN "MASTER" floodlight than with other types. Less lamp changes required by using this "MASTER" flood rather than smaller wattages. For less than ½ the lamp cost you receive the same amount of light. THESE ARE COLD FACTS . . ARE YOU GETTING LUMENS OR LEMONS? You can apply similar advantages to offices, schools and factories with SMOOT-HOLMAN QUALITY LIGHTING EQUIPMENT . . THERE IS A DIFFERENCE.

FLOODLIGHT AREAS



STANDARD DOME

CLASSROOMS

EDUCATOR

SIGN OF QUALITY

SMOOT-HOLMAN

INGLEWOOD CALIFORNIA

SALES OFFICES IN MOST PRINCIPAL CITIES

OFFICE AND WAREHOUSE SAN FRANCISCO

AUGUST 1954

SPOKESMAN FOR MOST HIGHLY ELECTRIFIED REGION OF THE U. S.
The all-industry magazine of progress, established 1887, and incorporating the "Electrical Journal," "Journal of Electricity, Power and Gas" and "Journal of Electricity." Contents copyright. Sixty-seventh year of publication

VOL. 113 NO. 2

ELECTRICAL WEST

George C. Tenney, Editor
W. A. Cyr, Associate Editor
Peggy Boyer, Associate Editor
Walter C. Heston, Engineering Editor
John Cootz, Typography

Next Month

September is the annual lighting issue. Featured again this year will be several of the IES winners in the "My Most Interesting Lighting Job" contest.

Douglas Aircraft has the largest luminous ceiling lighting job in the country. This installation where acoustical properties, air conditioning, sprinkler heads and office machine outlets are provided for will be described.

An innovation in the lighting issue this year will be a number of Christmas lighting ideas.

The distinction between sight and vision will be covered in a piece by Dr. Howard Hall, optometrist of Seattle. This fundamental approach to the problems of the illuminating engineer comes from a man who is a prominent member of IES as well as an optometrist. Examples of good lighting jobs from all over the West will round out the issue.

In engineering there will be a description of a new stringing technique being used on a Bonneville Power Administration 345-kv line now under construction, as well as a review of BPA's plans for transmission at 287 kv and 345 kv to supplement its 230-kv grid.

How the Palo Alto municipal distribution system was revamped to relieve growing pains will be of interest to distribution engineers.

Regular departments will appear as usual.

CONTENTS

Why Are We Losing This Business? by Don B. Clayton Sr... 55

ENGINEERING

New Design, New Layout for Pittsburg by C. C. Whelchel. 58
It's Cheaper When Done on the Ground..... 63
Tract Underground Costs Cut Up to One-Half..... 64
Puts You There..... 66

LIGHTING AND WIRING

Speed Relighting With a Gun..... 67
San Diego G&E Sets New Example..... 68
Where Electricity Multiplies Floor Space..... 69
Arc Welding of Aluminum Proves Best by Louis E. Anderson..... 75

SALES

Fine Meeting—Slow Market..... 78
According to Her Own Hawaiian Recipe..... 85

ASSOCIATIONS

Contractors Express Their Minds..... 86

DEPARTMENTS

Bulletins	48	New Products	28
Contractors' News Letter	71	News	108
Editorials	76	Profiles	130
Electra's Husband	52	Sales Guide News Letter	81
Letters to the Editor	50	Advertising Index	130

ADVERTISING REPRESENTATIVES

Chicago (11)..... Michael I. O'Connell, 520 N. Michigan Ave.
Los Angeles (17)..... Carl Dysinger, 1111 Wilshire Blvd., MA 6-4323
New York (36)..... Walter Klein, 330 W. 42nd St.
San Francisco (4)..... Tom Carmody, Dick Aitcen, 68 Post St., DO 2-4600
Offices: Atlanta, Boston, Cleveland, Dallas, Detroit, Philadelphia, Pittsburgh, St. Louis

THE ELECTRICAL WEST EDITORIAL ADVISORY BOARD—UTILITIES: N. R. Sutherland, Vice-President and General Manager, Pacific Gas and Electric Company, San Francisco; J. A. Hale, Vice-President Utah Power & Light Company, Salt Lake City; Glenn L. Jackson, Vice-President, the California Oregon Power Company, Medford; Kinsey M. Robinson, President, Washington Water Power Company, Spokane; J. H. Polhemus, President and General Manager, Portland General Electric Company; W. C. Mullendore, Chairman, Board of Directors, Southern California Edison Co. Ltd., Los Angeles. MANUFACTURERS: J. H. Pengilly, Executive Vice-President, Square D Company, Los Angeles; R. A. Neal, Vice-President, Westinghouse Electric Corporation, San Francisco; Ray Turnbull, Vice-President, General Electric Company, San Francisco. WHOLESALERS: A. H. Meyer, Lee J. Meyberg Co., San Francsico and Los Angeles; Harry C. Gerster, Vice-President, General Electric Supply Co., Los Angeles. CONTRACTORS: Teo L. Rosenberg, T. L. Rosenberg Co., Oakland; Don Larson, manager, Rocky Mt. Chapter, NECA, Denver. DEALERS: K. L. Hampton, manager, Valley Electrical Supply Company, Fresno; J. C. Chamberlain, Sec.-Mgr., Bureau of Home Appliances, San Diego, California.

ELECTRICAL WEST (with which is consolidated The Journal of Electricity). AUGUST 1954. Vol. 113, No. 2. Published monthly by McGraw-Hill Company of California. **Publication office, 1111 Wilshire Blvd., Los Angeles 17, California, Editorial and Advertising Offices: 68 Post St., San Francisco 4, Calif.** James H. McGraw (1860-1948), Founder; Donald C. McGraw, Chairman of the Board; George C. Tenney, President; John W. Otterson, Vice-President; B. M. Baccoli, Secretary and Treasurer. **Subscriptions: Address correspondence to Electrical West—Subscription Service, 68 Post St., San Francisco 4, Calif. Allow 30 days for change of address. Please indicate position and company connection on all subscription orders.** Single copies 25c. Subscription rates—U. S. possessions and Latin American Republics: $2 a year; $3 for two years; $4 for three years. Canada $2.50 a year; $5 for three years. All other countries $3 a year; $5 for two years; $6 for three years. Entered as second class matter April 17, 1947, at the post office at Los Angeles, Calif., under the act of March 3, 1879. Printed in U.S.A. Copyright 1954 by McGraw-Hill Company of California. All rights reserved.

1. Variac to control output voltage.
2. Range Switch transfers microammeter from 50 to 1000 microamperes range.
3. Guard Switch for by-passing stray currents to ground.
4. Neon Bulb protects against continuous overload.
5. Dual Range Microammeter measures leakage current.
6. Kilovoltmeter measures output voltage.
7. Calibration Curves translate microamperes into ohms resistance.
8. Power Switch (on-off control).
9. Grounding Post insures protection to operator.
10. Indicator Light (power on or off).
10
4
6
9
8
1
2
3
5
7

L-M DC Insulation Tester, being used to check insulation on a Kyle Type H Recloser.

L-M's New DC Insulation Tester Assures More Positive Maintenance For Reclosers

New portable unit operates on 120 volts, 60 cycles; requires low input power; is easily handled by one man. Use of DC gives high degree of accuracy, tells relative strength of insulation, and avoids useless replacement of good insulation. Completely protected so the device cannot be damaged by a short circuit; can measure any part of a number of insulation paths, one stringer or an entire recloser. Costs only $375.

L-M's new DC Insulation Tester is a highly efficient, low-priced portable unit that provides accurate determination of the condition of insulation in reclosers or other apparatus.

With this tester you can greatly improve recloser maintenance. It avoids replacement of insulation that is still in good condition; and it indicates when insulation should be replaced so that a recloser with faulty insulation is not put back on the line.

It may be hooked up to test the complete apparatus, or just one stringer in the unit.

It measures the DC insulation resistance of the entire apparatus or any part, at test voltages from 1 KV to 15 KV DC. It operates instantly, there being no vacuum tubes requiring a warm-up period.

Leakage current is measured by a dual range microammeter with a 50 microampere and a 1000 microampere range.

One man can operate the unit. It weighs only 50 pounds, so that it is easily transported. Input power is low. The tester may be supplied from any 120-volt 60-cycle source.

Fully Protected

The microammeter is protected against sudden surges and protected against continuous overloads by a neon bulb that fires and by-passes the measuring circuit when an overcurrent occurs. Output current is limited in case of insulation failure by series resistors. The circuit high voltage components are protected against accidental over-voltages by an adjustable gap which discharges the output capacitor through a resistor.

Economical

The L-M DC Insulation Tester costs only $375.00. It takes out the guesswork and assures more positive recloser maintenance. A few moments' time can prevent hours of additional apparatus replacement, and the timely replacement of a faulty piece of insulation may prevent serious damage or complete destruction of valuable apparatus.

Get Complete Information

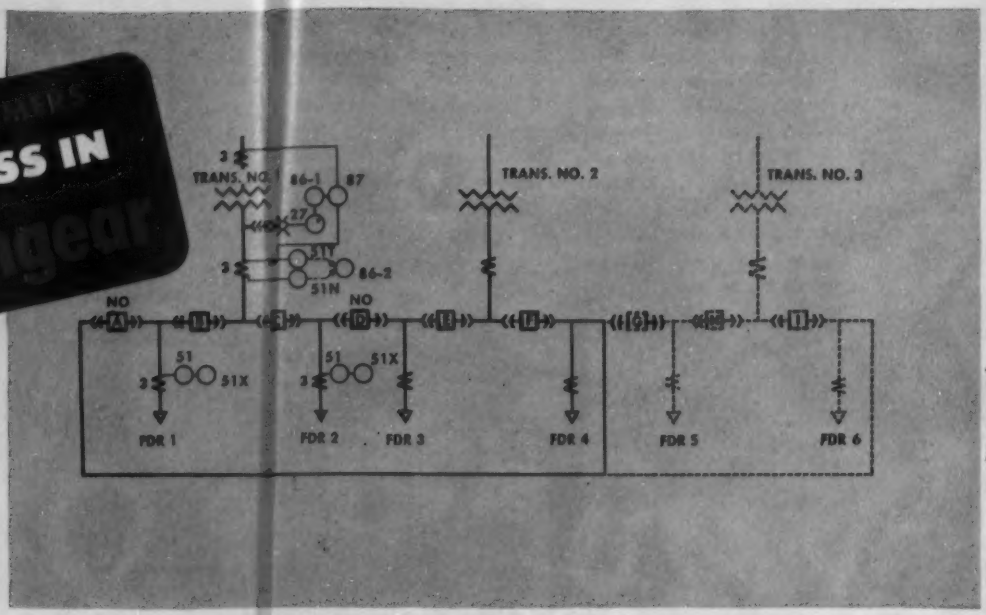
Ask the L-M Field Engineer for the new bulletin on the L-M Insulation Tester—or get a demonstration. Or write Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

The L-M Insulation Tester is completely self-contained. Cover holds all leads, power cord, and instruction book. The whole unit weighs only 50 pounds.

155-R

LINE MATERIAL

Kyle Reclosers



RING BUS...

Here are Questions and Answers on why

Q. What is a Ring Bus?

A. It is a circuit arrangement for improving power continuity by providing every feeder with two sources, using only one breaker per circuit.

Q. Is this a new idea?

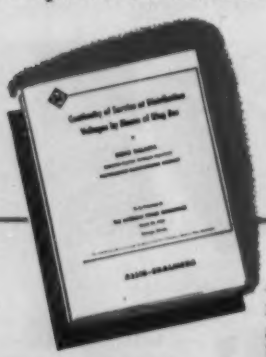
A. No. It is among the first schemes studied by substation engineers, but in its early conception it had certain drawbacks.

Q. What were the problems of early Ring Bus schemes?

A. Problems were mainly in physical arrangement, large space requirements, and need for tie cables and connecting bus runs.

Q. Have these problems been eliminated?

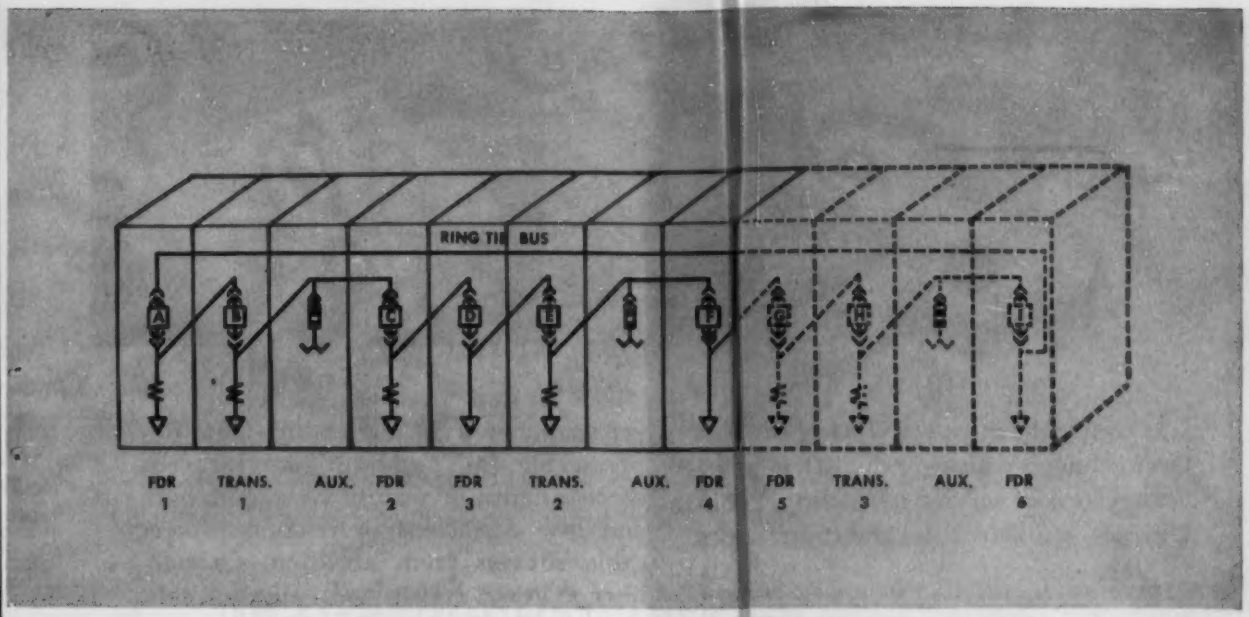
A. Yes, Allis-Chalmers pioneered a metal-clad switchgear design that permits the entire ring to be included in a lineup of standard metal-clad switchgear cubicles, thus conserving space and eliminating tie cables and connecting bus runs.



Get More Information

Ask for the brief but interesting engineering paper, "Continuity of Service at Distribution Voltages by Means of Ring Bus." Call your nearby Allis-Chalmers office, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

ALLIS-



Advantages

interest is turning again to the Ring Bus

Q. *What are main advantages of Ring Bus?*

A. There are several in addition to those mentioned.

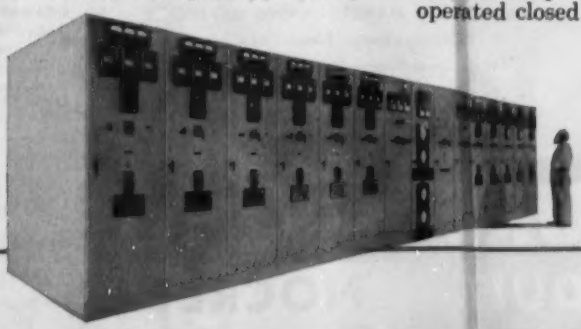
1. Adds power continuity — Any breaker can be removed from its unit without disrupting continuity of service.

2. Aids maintenance — Any portion of switchgear bus can be de-energized by dropping only one circuit.

3. Adds flexibility to station — Substation capacity may be increased by adding transformer and feeders at either end by dropping only one circuit.

4. Ring Bus is versatile — Each set of feeders and its supply transformer can be operated separately when ring tie breakers are open. When momentary interruptions are undesirable, ring may be operated closed and transformers paralleled.

A-4421

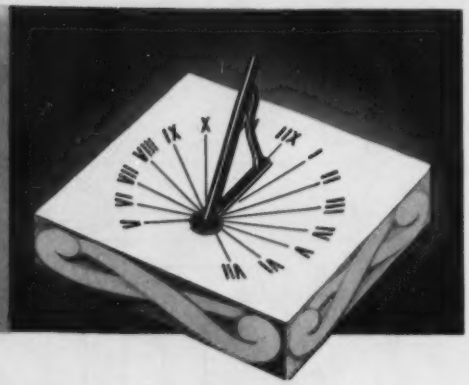


CHALMERS

A-C ALLIS-CHALMERS

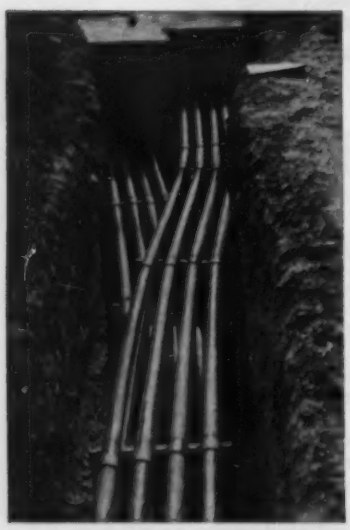
QUALITY

...proved by TIME...



Of course the most convincing proof of Orangeburg's enduring quality is its 60-year record of service to leading Public Utilities, Municipalities and Contractors.

Quality stands out in every feature. Orangeburg Fibre Conduit is lightweight yet strong, tough and resilient. Its impermeable walls and tight joints keep out corrosive ground waters. Its smooth bore and low coefficient of friction protect cable sheaths from abrasion. Orangeburg material resists acids, alkalies, salt, grease and oil.



ORANGEBURG STANDARD is installed with concrete encasement. Preferred for banks of three or more ducts. It has installations in service over 60 yrs.

For these and other advantages Orangeburg provides complete security for electrical services underground. Result...no interruption of power. These vital services keep flowing.

SAVES MONEY, TOO!

Saves by prolonging cable life . . . by faster and easier handling, tooling and laying . . . and by the use of Orangeburg's standard fittings. They cut costs by simplifying installation.

Send to Dept. EL84 for more facts.

ORANGEBURG MANUFACTURING CO., INC.
Orangeburg, New York
West Coast Plant — Newark, California

ORANGEBURG NOCRETE is installed without concrete encasement. Extra heavy wall for direct burial—practical for many single or double duct runs.

ORANGEBURG® FIBRE CONDUIT

STANDARD INSTALLED WITH CONCRETE

NOCRETE INSTALLED WITHOUT CONCRETE

Graybar ELECTRIC COMPANY

DISTRIBUTORS, ORANGEBURG FIBRE CONDUIT

BRANCHES AND STOCKS IN PRINCIPAL CITIES

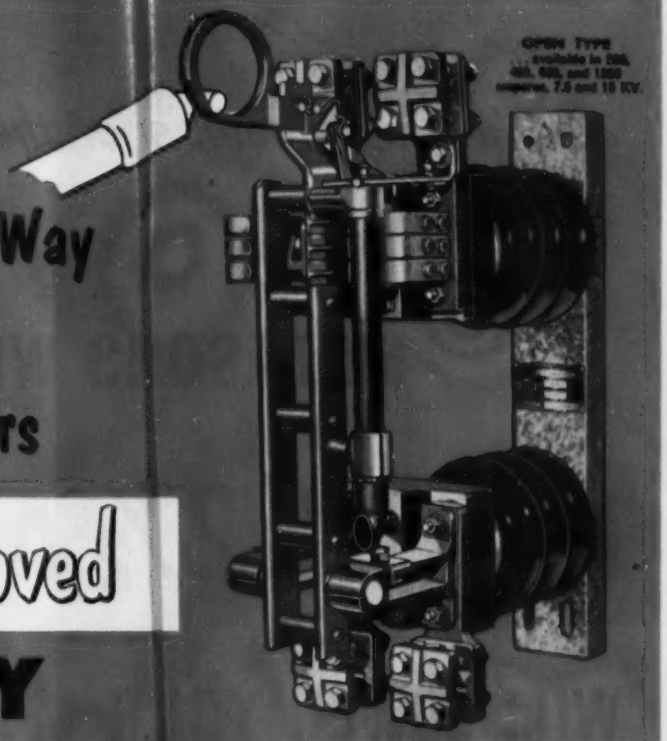
GENERAL ELECTRIC SUPPLY COMPANY

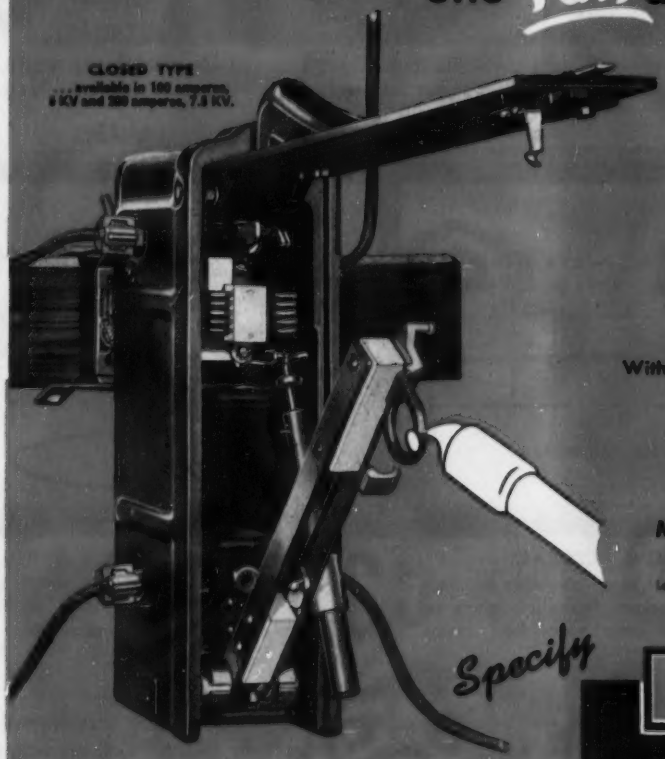
A DIVISION OF GENERAL ELECTRIC DISTRIBUTING CORPORATION

Here's the Simplest, Safest Way to By-Pass Voltage Regulators

the New Improved KEARNEY BY-PASS DISCONNECT SWITCH

one Pull does 3 switching jobs





- **BY-PASSES THE REGULATOR** Automatic make-before-break eliminates all danger of load-dropping
- **OPENS BOTH REGULATOR LEADS** Without arcing at the contact points
- **INTERRUPTS THE EXCITING CURRENT** For absolutely fool-proof safety

With this one KEARNEY switch to take the place of three, you save switchgear expense, installation costs and substation space.

For full information and prices, ask your KEARNEY man or write:

MAYDWELL & HARTZELL, *INCORPORATED*

WEST COAST DISTRIBUTORS

Los Angeles • San Francisco • Portland • Seattle • Spokane • Phoenix

Specify

JAMES R. KEARNEY CORPORATION ST. LOUIS, MO. GUELPH, ONT.

For Better Construction ... Safer Maintenance

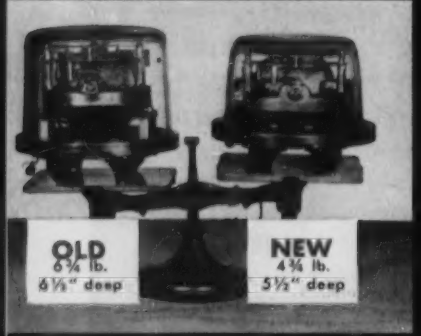
2438

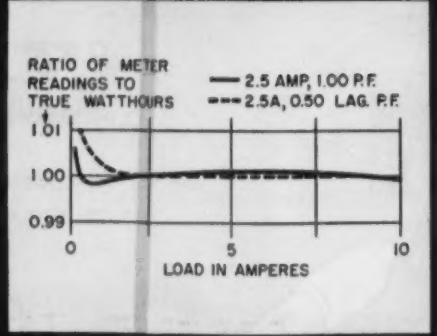
Another new member of the I-50 family

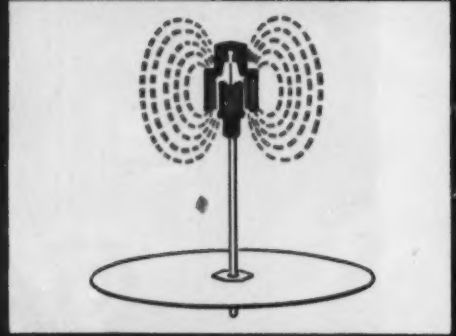
5 REASONS WHY THIS

NEW G-E 2½-AMP METER*

WILL LOWER YOUR METERING COSTS







1 **NEW TRANSFORMER-RATED METER** is lighter, smaller than older types; means faster, easier installation, lower handling costs.

2 **STRAIGHT-LINE ACCURACY** over 400 per cent load range combines accuracy and transformer flexibility; gives accurate use over wide load range.

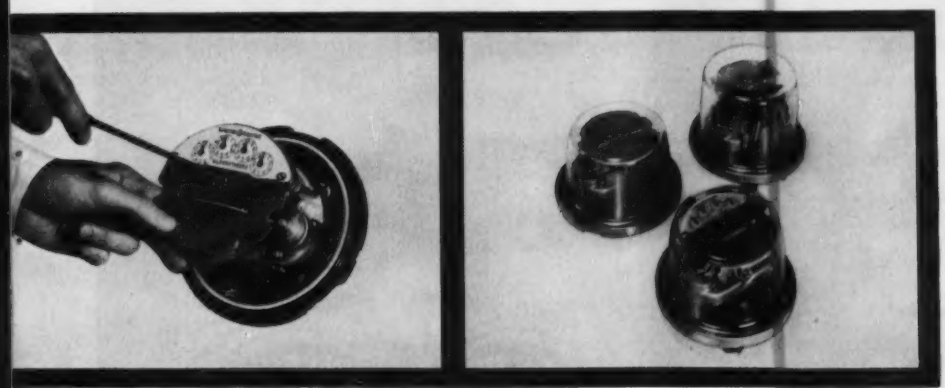
3 **MAGNETIC SUSPENSION,** with "floating disc," provides extreme accuracy and stability of calibration; minimizes testing and maintenance costs.

* **FOR MORE INFORMATION** on the new General Electric 2½-ampere I-50 transformer-rated watthour meter, or for a sample demonstration, contact your nearest G-E apparatus representative or write Section 601-105, General Electric Co., Schenectady 5, New York.

NEW

General Electric Type I-50 2½-ampere transformer-rated watthour meter

LATEST ADDITION to the General Electric I-50 family, the 2 1/2-ampere transformer-rated meter is designed for use with current and potential transformers. When used with the proper transformer, the new meter has the inherent accuracy of the I-50 family.



4 **DETACHABLE NAME PLATE** allows easy rating for any transformer ratio, increases flexibility, facilitates re-rating as future load grows.

5 **ATTRACTIVE DESIGN** of dependable new 2½-amp meter gives nicety of appearance consistent with other members of the I-50 family; combines versatility with appearance.

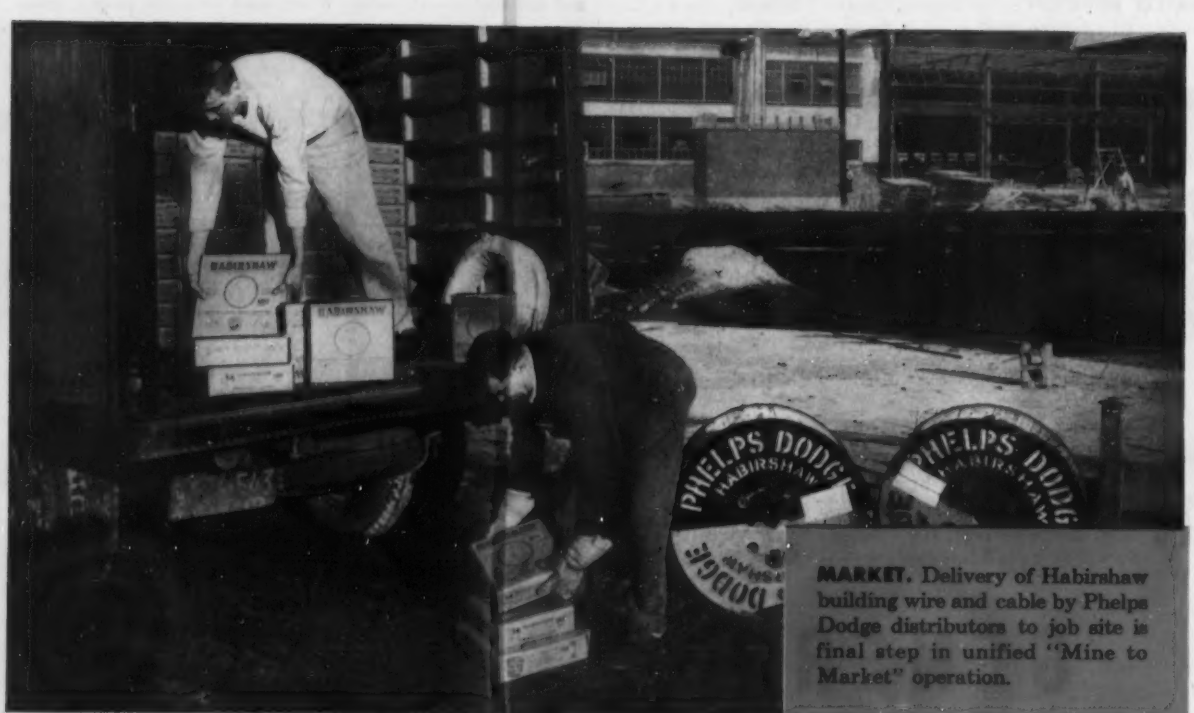
GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

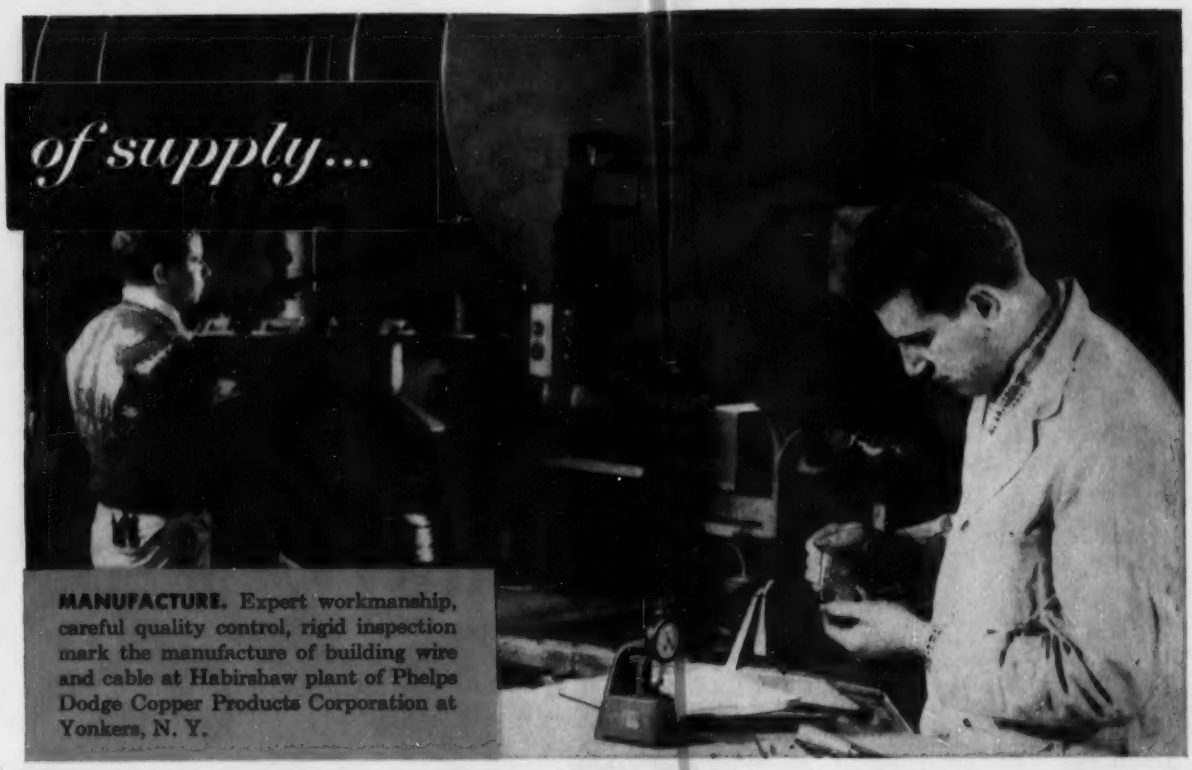
When you need a dependable source

MINE. Habirshaw building wire and cable start in vast Phelps Dodge open-pit copper mines like this one at Morenci, Arizona.

IT PAYS TO SEE A PHELPS



MARKET. Delivery of Habirshaw building wire and cable by Phelps Dodge distributors to job site is final step in unified "Mine to Market" operation.



MANUFACTURE. Expert workmanship, careful quality control, rigid inspection mark the manufacture of building wire and cable at Habirshaw plant of Phelps Dodge Copper Products Corporation at Yonkers, N. Y.

DODGE DISTRIBUTOR!

Phelps Dodge's complete "Mine to Market" program assures distributors dependable supplies and service

Here's what "Mine to Market" means to you:

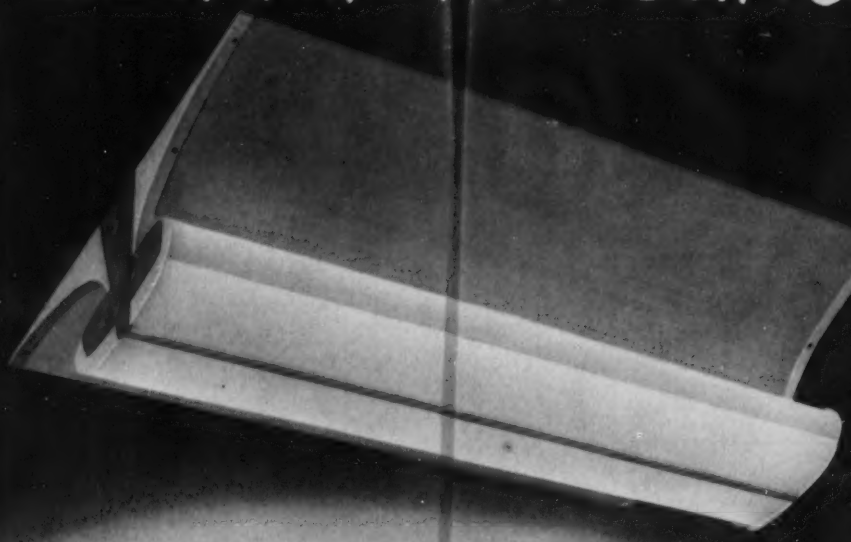
1. ***A CONSTANT SUPPLY OF RAW MATERIALS.***
2. ***HIGHEST QUALITY WORKMANSHIP.***
3. ***PROMPT DELIVERY—all from one major source.***

Phelps Dodge distributors are an integrated part of this system, profit from working closely with a primary copper producer and fabricator.

PHELPS DODGE COPPER PRODUCTS CORPORATION

WIRE BY PHELPS DODGE MEANS WIRED FOR LIFE!

SYLVANIA ANNOUNCES—



Close-up of Sylvania Sono-Lume unit showing perforated metal wings backed with sound-deadening glass fiber batting. Fixtures may be also equipped with louvers instead of plastic shielding. Mounted singly or in continuous rows.

SONO-LUME*.....

the Fixture† which Controls Sight and Sound!

New fluorescent lighting fixture has built-in sound-conditioning system . . . easily installed!

Now Sylvania introduces SONO-LUME . . . a new concept of sight and sound control!

Basically, Sono-Lume is an attractive fluorescent fixture incorporating principles worked out by Sylvania engineers.

The perforated wings on each side of Sono-Lume fixtures are backed with glass fiber batting. This element has the excellent noise reduction coefficient of 0.85. Thus the fixture serves a double purpose: (1) It provides high levels of clear, soft, all-over illumination for comfortable seeing. (2) It holds unnecessary noise to low levels for comfortable hearing.

Saves modernization costs!

Sylvania Sono-Lume fixtures can be readily installed in any office, conference or consultation room. In instances where sound-proofing and better lighting are separate projects, this new combination fixture keeps costs well within modest budgets. A note on your letterhead will bring you detailed information. Simply address Dept. 4X 2608, at Sylvania.

LIGHTING CONTRACTOR — SYLVANIA

Look for this emblem—your guide to a Qualified Lighting Contractor.

*Sylvania Trade Mark
†Patent Pending

SYLVANIA

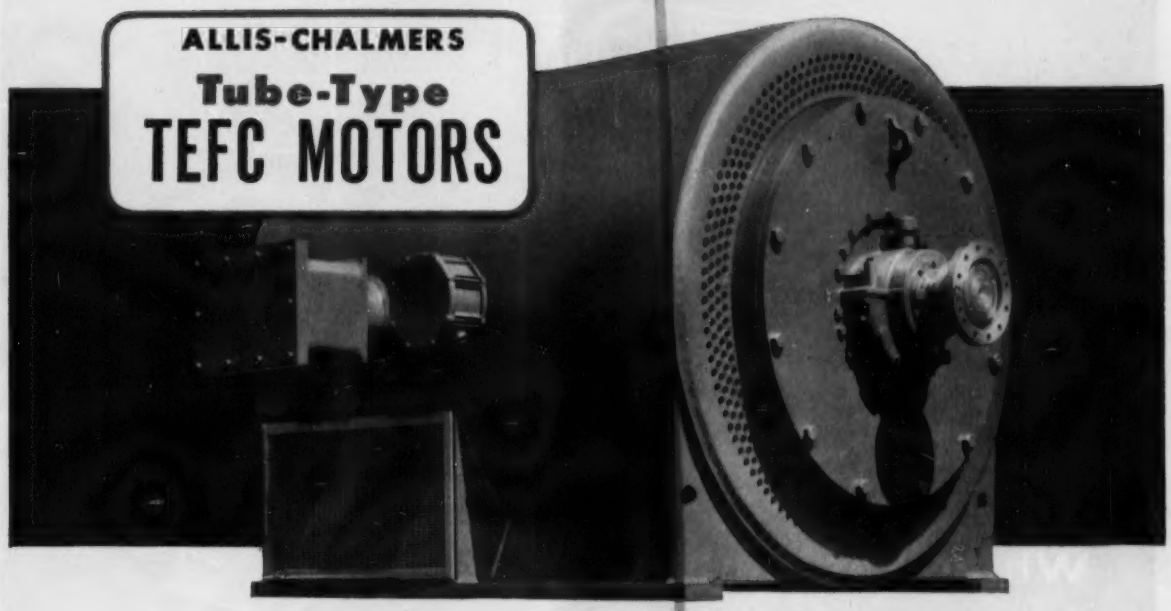
215 MARKET STREET, SAN FRANCISCO 5, CALIFORNIA

Sylvania Electric Products Inc., 1740 Broadway, New York 19, N. Y.

LIGHTING · RADIO · ELECTRONICS · TELEVISION

NOW 1250 Hp—1780 Rpm Underwriters' Approved

for Class I, Group D Service



Allis-Chalmers explosion-proof motors as large as 1250 hp, 2300 volts, 1780 rpm are now available with Underwriters' Laboratories, Inc. labels for operation in Class I, Group D hazardous locations.

Previous to recent tests, the Allis-Chalmers Underwriter-approved motor line included ratings up to 800 hp, 3600 rpm for operation in Class I, Group D and Class II, Group F and G locations. Now, with the design used for larger ratings also Underwriters' test-proved, Allis-Chalmers can supply explosion-proof motors in other ratings required by industry.

Ratings up to 800 hp, 3600 rpm.

Construction used for larger ratings.

Explosion-Proof Plus

Operation-proved by TEFC motors totaling over a quarter million horsepower, the A-C tube-type air-to-air heat exchanger design combines safety and maximum operating economy. Self-cleaning action cuts maintenance. Full internal air circulation lengthens insulation life. Complete enclosure protects stator core and other electrical parts from dirt and corrosion.

For approved motors for hazardous dust and gas locations, contact your A-C representative, or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4436

ALLIS-CHALMERS

To keep in step with your constantly changing business, your communication system should be examined periodically. In that way, your communications never become outdated — always meet your exact needs at the lowest cost. If you have Bell System service, such studies are a continuing activity.

Bell System communication engineers will also help you take a good, close look at your own communications . . . *at no cost to you!* Their detailed study will help you get the most efficient use of your facilities . . . whether they are long distance, mobile, teletypewriter, or metering and supervisory control.

A growing number of power companies are taking advantage of Bell System service in meeting the communications demands of modern operation.

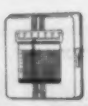
• • •

If you are interested in a detailed communication survey by Bell System engineers without charge, call your local Bell Telephone representative now.

PRIVATE-LINE TELEPHONE

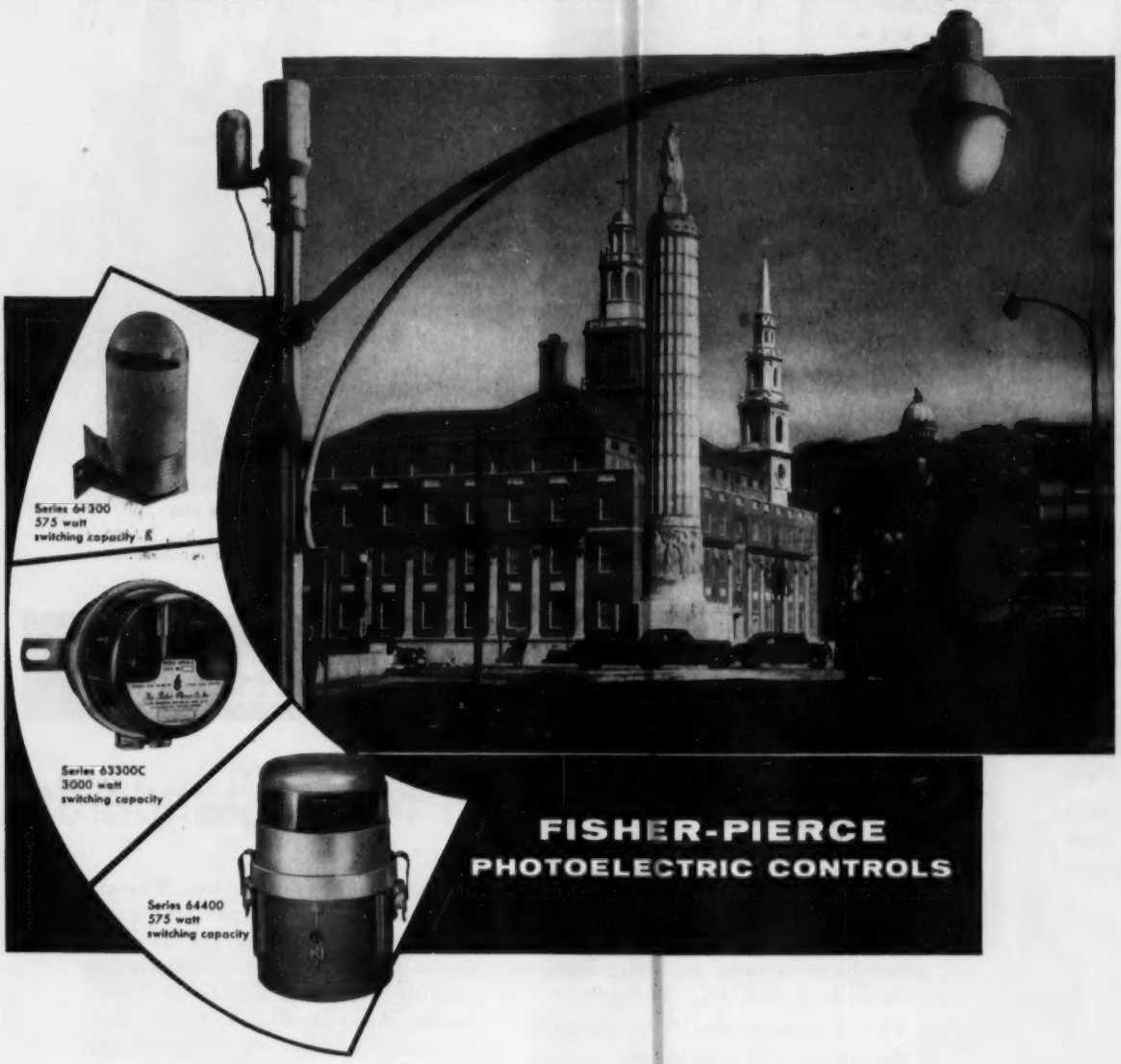
TELETYPEWRITER

MOBILE TELEPHONE


METERING CHANNELS

BELL TELEPHONE SYSTEM

CONTROLLING STREET LIGHTS IN PROVIDENCE, R. I.

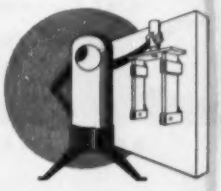


Motorists and pedestrians in Providence can thank their City Government for authorizing The Narragansett Electric Company to install dependable, automatically controlled street illumination.

The use of Fisher-Pierce street lighting controls assures dependable *automatic* illumination of streets the moment daylight drops below a safe value. Because F-P controls are photoelectric, they operate regardless of the hour, the season or the weather.

On the job in Providence since 1946, F-P controls now number about 3000. Narragansett engineers report favorable installation economics *and* an extremely low failure rate — only 2.29% of *all* units during a recent 12-month period.

Long, dependable service of F-P controls — in street lighting control systems in Providence and hundreds of *other* communities — is the basic reason Fisher-Pierce is recognized as a *leader* in its field.

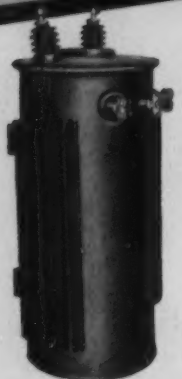


THE
FISHER-PIERCE
COMPANY, INC.
43 Pearl St., So. Braintree, Boston 85, Mass.

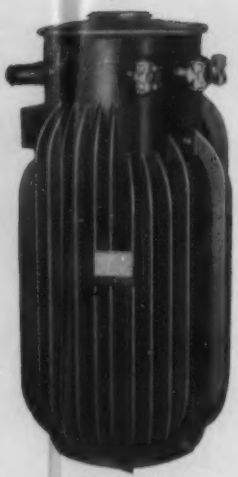
EXPORT: PHILLIPS EXPORT CORP.
DIVISION OF NORTH AMERICAN PHILLIPS
100 E. 42ND STREET
NEW YORK 17, N. Y.

IN CANADA:
NORTHERN ELECTRIC CO., Ltd.

Wagner®
TRANSFORMERS
...the choice of leaders
in industry



TYPE HEK
Single-phase 50 kva, 12000 to 120/420 volt transformer shown.



TYPE HEB
Single-phase 100 kva, 2400/4160Y to 120/240 volt transformer shown.

TYPE HEL
Single-phase 333 kva, 34400 to 7200 volt transformer shown.

choose Wagner

they meet all NEW EEI-NEMA Standards

The Wagner line of Distribution Transformers will meet your requirements no matter how varied they may be. The line includes *every rating and design* listed in the E. E. I.—NEMA *Fifth Report.*

When you choose WAGNER, you get all the standardized electrical and mechanical features that assure quick, easy installation and greater convenience in handling and maintenance. You get full Wagner Quality—the kind of quality that pays dividends in years of extra service. You get the benefit of improved design, better performance and longer transformer life.

You get quick delivery, too. Wagner's expansion program has provided a new plant, devoted exclusively to the manufacture of transformers, to help meet the growing demand for Wagner Transformers. And—in addition, Wagner has a nationwide organization to provide fast, convenient service, with branches in 32 principal cities.

Get in touch with your nearby Wagner branch today. Write for your copy of Bulletin TU-180. It gives complete information on Wagner Distribution Transformers.

Wagner Electric Corporation EST. 1891

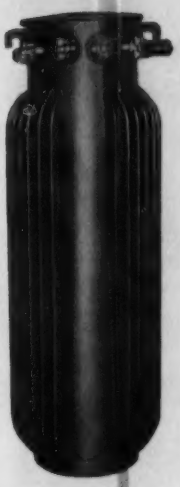
WAGNER ELECTRIC CORPORATION
6381 Plymouth Avenue • St. Louis 14, Mo., U.S.A.

ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS — AIR AND HYDRAULIC

BRANCHES IN 32 PRINCIPAL CITIES

TS4-14

TYPE HPK
Three-phase 225 kva, 7200 to 240 x 480 volt transformer shown.

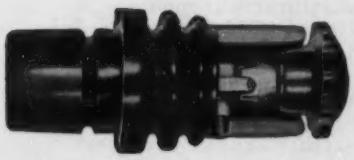


TYPE HPB (Vertical)
Three-phase 112.5 kva, 2400 to 208Y/120 volt transformer shown.

TYPE HPB
Three-phase 75 kva, 2400 to 240 x 480 volt transformer shown.

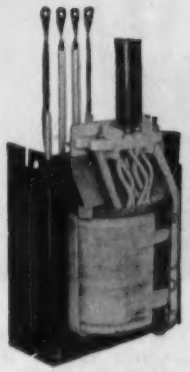
Distribution Transformers

...and offer these EXTRA features, too!



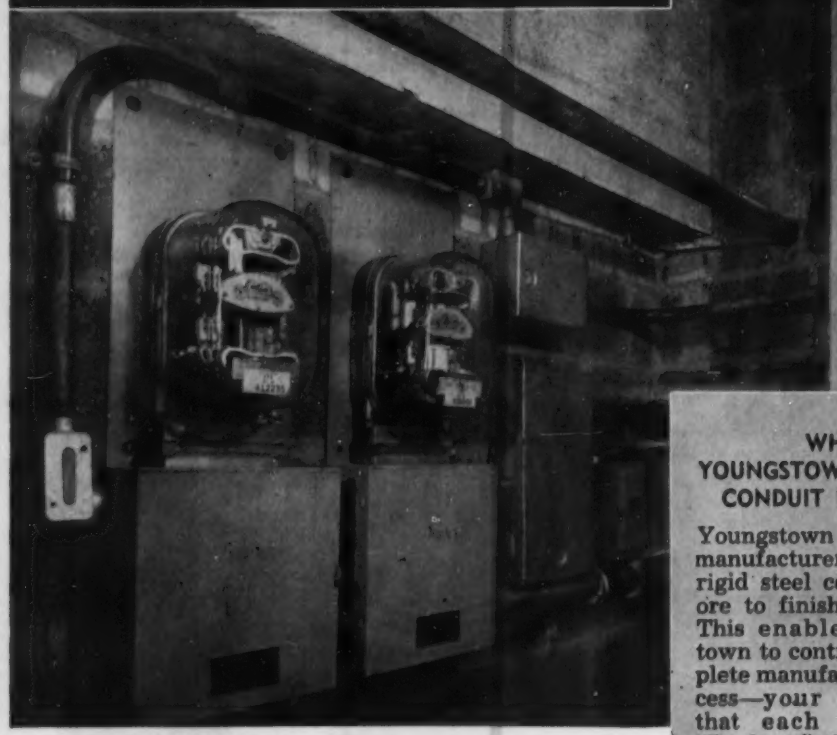
The high voltage sidewall bushings used on Wagner Distribution Transformers permit faster, easier, safer permanent connections. The conductor slips into the connector—no special tools are needed. The connector is then tightened by a few turns of the insulated finger-grip knob.

All Wagner pole-type transformers in round tanks have covers sealed to the tank with the Wagner SHUR-SEAL Clamping Ring that prevents "breathing" and gives true sealed-tank construction. Wagner Distribution Transformers are filled with inhibited oil to reduce oxidation and retard the formation of acids and sludge.



All Wagner pole-type single-phase transformers in ratings 167 kva and below are furnished with Wagner Form W core and coils that permit a liberal design in small size, lightweight transformers that give excellent electrical performance.

Upper Manhattan Medical Group Building, New York. Nememy, Geller & Yurchenco, Associated Architects.



WHY YOUNGSTOWN BUCKEYE CONDUIT IS BETTER

Youngstown is the one manufacturer who makes rigid steel conduit from ore to finished product. This enables Youngstown to control the complete manufacturing process—your insurance that each length of "Buckeye" is made of top-grade steel.

●The new Health Insurance Plan Clinic in the Upper Manhattan Medical Group Building, New York City, is another modern structure in which the electrical wiring is given sure protection of Youngstown Buckeye Conduit. Standard-threaded rigid steel conduit, of which Youngstown Buckeye is the leading brand, is the only wiring system approved by the National Electrical Code as moisture, vapor, dust and explosion proof in hazardous locations.

Youngstown

QUALITY YOUNGSTOWN SERVICE

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.

SHEETS - STRIP - PLATES - STANDARD PIPE - LINE PIPE - OIL COUNTRY TUBULAR GOODS - CONDUIT AND EMT - MECHANICAL TUBING - COLD FINISHED BARS - HOT ROLLED BARS - BAR SHAPES - WIRE - HOT ROLLED RODS - COKE TIN PLATE - ELECTROLYTIC TIN PLATE - RAILROAD TRACK SPIKES

For many years Contractors from Coast to Coast have used Briegel All Steel Indenter Fittings. U. L. approved as concretetight and for general use, B-M Indenter Fittings are faster, easier to use and neater in appearance.

Installation is simple and less expensive. Two quick squeezes sets them forever. Try B-M Indenter Fittings and get more profits from each job!

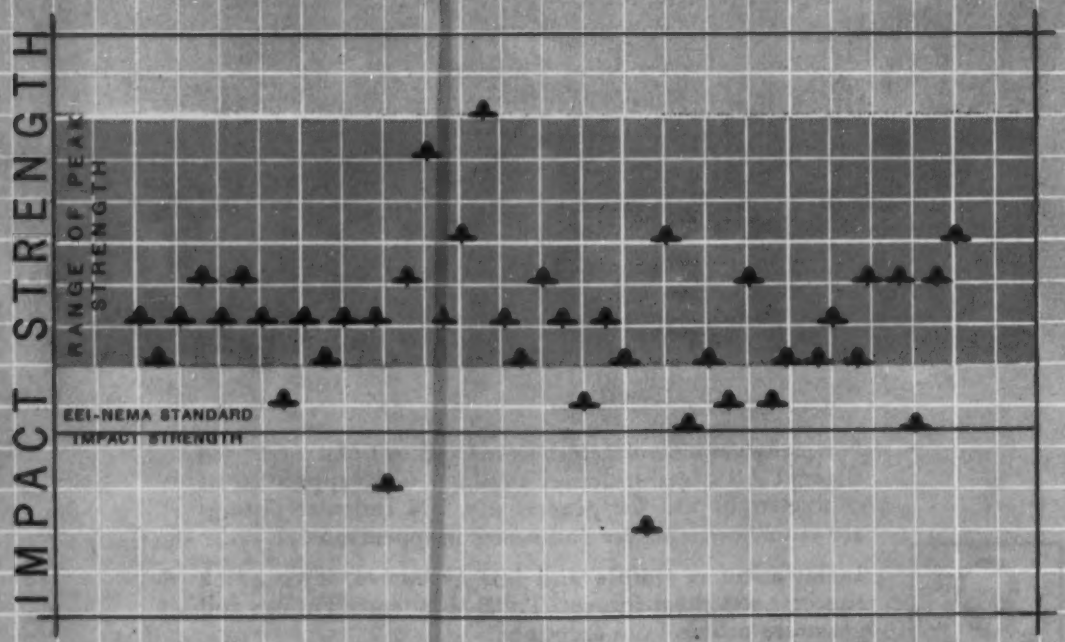
BRIEGEL METHOD TOOL CO.

GALVA, • ILLINOIS

Warehouse Stocks in Principal Cities for Immediate Delivery!

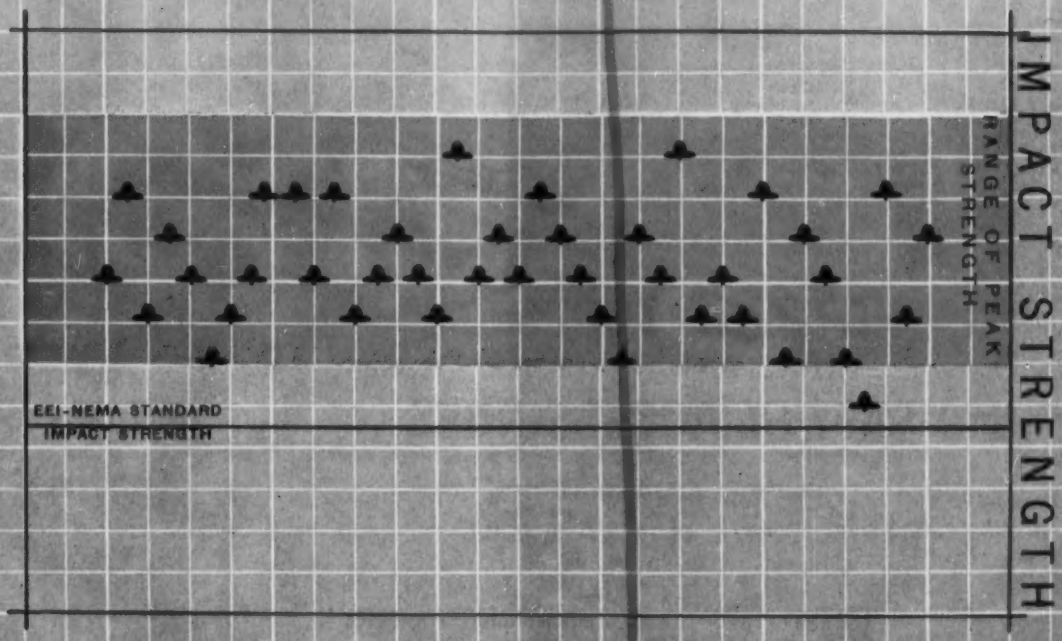
LOCKE gives you *new protection*

Impact strength of any suspension insulator now on your lines may fall well below the range of peak impact strength, as shown here by test results of representative industry samples of 10" suspension insulators.*



***FOR FURTHER DETAILS ASK YOUR LOCKE SALES REPRESENTATIVE**

against insulator failure



AIEE standard tests reveal 98% of new 10" MICROGLAZE† Suspension Insulators fall within the range of peak impact strength.* Microscopic control of glaze thickness makes the big difference! Next time, specify MICROGLAZE Suspension Insulators...your best insurance yet against the hazards of mechanical impact.

Don't miss Locke's ½ hour color film--
"The Story of Microglaze Insulators"

LOCKE

LOCKE DEPARTMENT
GENERAL ELECTRIC COMPANY
BALTIMORE, MARYLAND

†Trademark of General Electric Company

HOT-LINE TOOLS and SAFETY ACCESSORIES ...via GraybaR

Your linemen are only as safe as their equipment—lives depend on its quality.

So, for sure, certain all-over protection order hot-line and safety needs from your near-by Graybar office. Made by well-known, highly-regarded manufacturers, they're all products your linemen respect . . . work with in confidence.

Chance hot-line tools — Graybar can supply Chance hot-line maintenance tools individually or in sets. Incorporating the latest developments in equipment for handling energized lines, Chance tools are tested to withstand 75,000 volts per foot. Metal fittings are lightweight, heat-treated aluminum alloy...poles are laminated Sitka Spruce. There's a specialized Chance tool designed to do every hot-line job safely and efficiently.

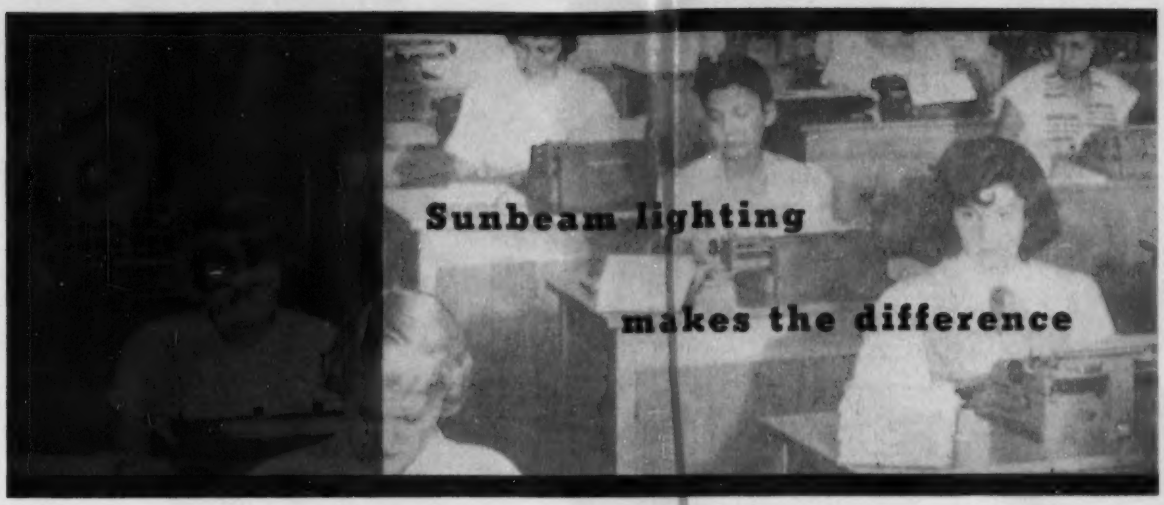
Salisbury Rubber safety accessories — Graybar distributes Salisbury protective devices of all types — rubber line hose and insulator hoods . . . rubber blankets and jackets . . . rubber coats, gloves, and sleeves. All are top-quality fully-guaranteed products made of purest crude rubber.

Call Graybar for all of your other pole-line needs as well. You can rely on your local Graybar Representative to provide complete, accurate information on anything you require. For special help on out-of-the ordinary problems, feel free to ask for the assistance of a Graybar Outside Construction Specialist. *Graybar Electric Co., Inc. Executive Offices: Graybar Building, 420 Lexington Avenue, New York 17, N. Y.* 347-88

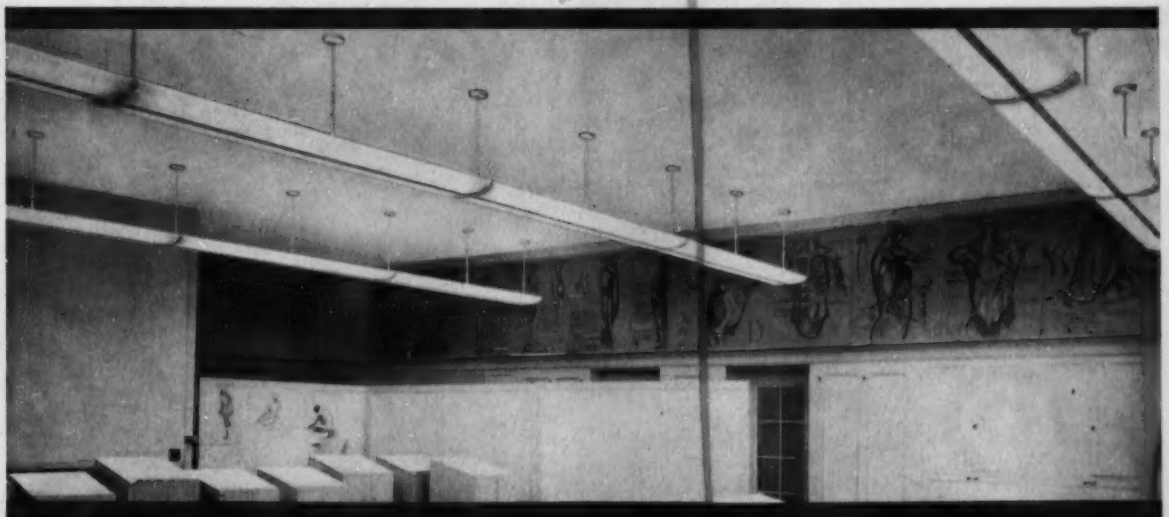
Call Graybar first for...

GraybaR Everything Electrical GraybaR ELECTRIC COMPANY

IN OVER 100 PRINCIPAL CITIES



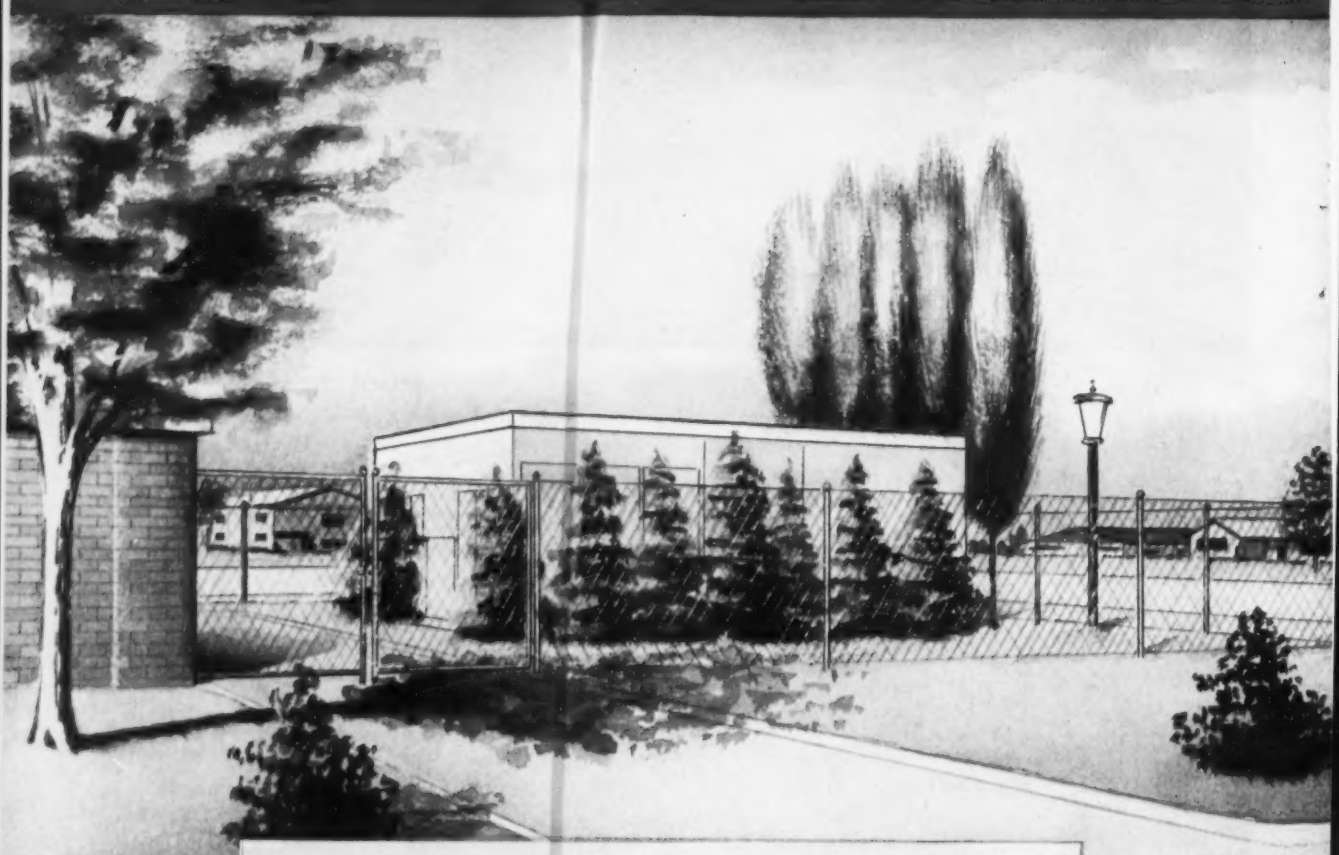
The difference between an advanced or retarded rate of learning in today's schools depends greatly on an integrated "seeing" environment. Among many important factors, scientifically planned illumination rates top consideration. It takes quality fixtures to produce quality illumination. The design and engineering of Sunbeam fixtures for schools is based on the recommended practices of the American Standards Association and the Illuminating Engineering Society's studies. Efficient light distribution, brightness control, minimum glare and simple maintenance are some features which make the difference in Sunbeam fixtures--which make quality fixtures. For new schools or relighting older classrooms, see our catalog of school units in the "American School and University" or consult our lighting engineers direct.

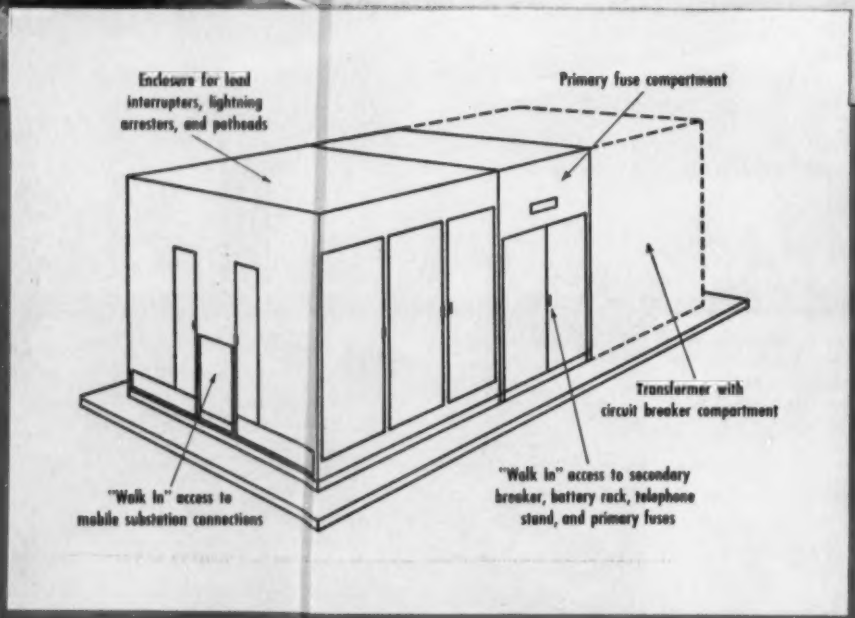


Over 650 Sunbeam all-plastic shielded #P1294-96 units in San Jose State College, San Jose, Calif.
Over 1100 Sunbeam shallow #L1282-48 units in Honnold Library, Claremont College, California

SUNBEAM LIGHTING COMPANY
777 East 14th Pl., Los Angeles 21, Calif.

WILL YOUR NEW DISTRIBUTION SUBSTATION




Enclosure for load interrupters, lightning arresters, and potheads
Primary fuse compartment
Transformer with circuit breaker compartment
"Walk in" access to secondary breaker, battery rack, telephone stand, and primary fuses
"Walk in" access to mobile substation connections

HAVE Neighborhood Acceptance?

WILL IT GIVE YOU ZONING BOARD APPROVAL?

With S&C Metalclad Primary Gear you get a compact, attractive, and *Completely* Enclosed Substation for residential areas—even when the primary service is 34.5 kv

Plus THESE EXTRA ADVANTAGES

- Tamper-free metalclad construction: High voltage is locked in . . . intruders are kept out—and safe
- Simple, *packaged* installation that saves the time and cost of piecemeal open construction
- *Reliable protection* and ability to switch under all conditions, except short circuit
- New conveniences in operating and maintenance

Incorporated in the unit on the left are these operating features:

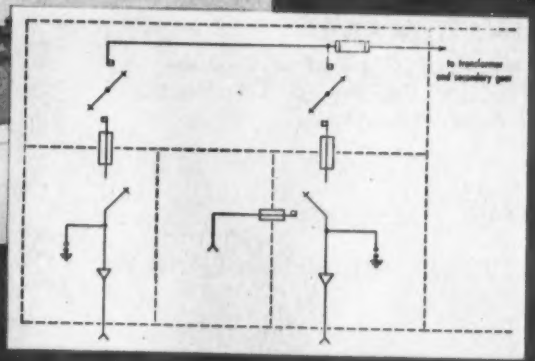
1) Pothead isolation—for protection of operators during maintenance

2) Disconnecting provisions to isolate load interrupters, to by-pass entire substation, and to feed mobile substation

3) Integral housing of control panels, battery rack, work stand, telephone stand. Elimination of need for unsightly tool shacks

4) Shelter for maintenance of secondary gear

5) Unit capsuled for shipment in one piece



Circuit diagram of the S&C Metalclad Primary Gear for the distribution substation illustrated. The gear is equipped with Type SM Power Fuses and Alduti Type Load Interrupters with provision for remote control operation.

S&C ELECTRIC COMPANY

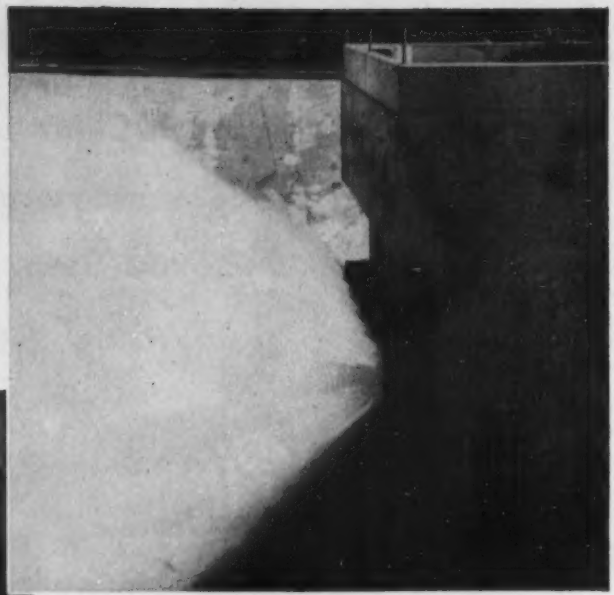
6425 RAVENSWOOD AVENUE
CHICAGO 40, ILLINOIS, U. S. A.

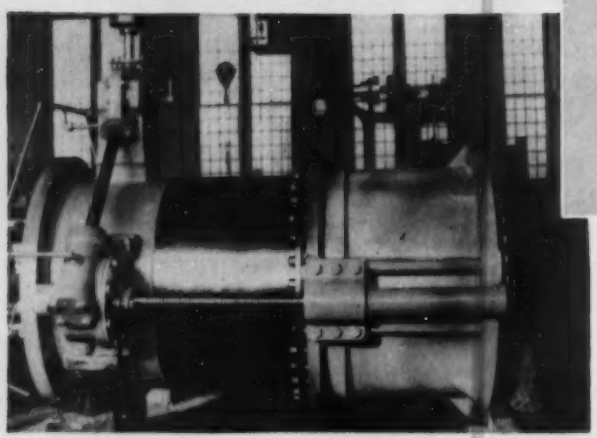
IN CANADA:
S&C ELECTRIC CANADA, LTD.
5 Vanzee Road, Toronto 14, Ontario

POWER FUSES • DISTRIBUTION CUTOUTS AND FUSE LINKS • LOAD INTERRUPTERS • METALCLAD SWITCHGEAR

Specialists in High-Voltage Circuit Interruption

HOWELL-BUNGER Valves by SMITH





Above: Five 32" SMITH Howell-Bunger valves in operation on the Metropolitan Water District of Southern California System, adjacent to Lake Matthews.

Left: Shop assembly of a 36" Howell-Bunger valve for Mill Creek Dam, U. S. Engineers, Walla Walla, Washington.

Provide Users with these Advantages . . .

- *EASY REGULATION AND CONTROL* of water under free discharge for high and low heads.
- *HIGH* discharge co-efficient (.85).
- Acts as its own *ENERGY ABSORBER* by breaking up the discharge into a large hollow expanding jet.
- Only *ONE* moving part in the stream flow (and this part is subject only to *WELL BALANCED FORCES*).

Available in sizes up to 108" diameter, large SMITH Howell-Bunger valves are installed for heads up to 420 feet, and smaller sizes for heads to 900 feet.

Write us for Bulletin No. 156 and List of Installations.

POWER by SMITH — 16,000,000 HP

76 YEARS EXPERIENCE DESIGNING AND MANUFACTURING HYDRAULIC TURBINES AND ACCESSORY POWER PLANT AND PUMPING STATION EQUIPMENT

S. MORGAN SMITH CO. York, Penna., U.S.A.

G&W is supplying new Garrison Dam with First 230,000 volt Potheads in the U.S.A.

G&W POTHEADS will provide the necessary protection to this important installation of high pressure oil pipe type cables operating at 230,000 volts. The potheads meet the voltage withstand tests (A.I.E.E. Standards No. 48) . . .

Impulse, 1.5 x 40 ms, crest Kv., full wave
—1,050,000 volts
60 cycles, RMS.
—1 minute dry—545,000 volts
—10 seconds wet—445,000 volts

The cables connect transformer banks to the switching station. The hydroelectric power plant will have a potential output of 400,000 Kilowatts.

G & W ELECTRIC SPECIALTY CO.
7780 Dante Avenue, Chicago 19, Illinois
Representatives in principal cities of U.S.A. In Canada—Powerlite Devices, Ltd.

Preparing the wrapped tape stress relief cone prior to the assembly of the supplementary porcelain tube for internal stress control.

AT-541

G&W

PRODUCT NEWS

Redesigned Motor

(1) Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Greater mechanical protection and increased accessibility to parts are features of redesigned large end-shield bearing synchronous and wound-rotor induction motors of four and more poles (types AB and ANY). The illustration shows a 700-hp 4,160-v 900-rpm synchronous motor (type AB) direct connected to a 5-kw, 125-v exciter.

The redesigned motors utilize the same capsule bearing and cast end-shield construction as the manufacturer's standard large squirrel-cage induction motor line. The fabricated-steel stator yoke has been lengthened to accommodate slip rings and brush rigging with access openings of ample proportions for brush inspection and maintenance, it is pointed out.

Rotor or slip-ring leads are not exposed in the new design. Internal connections are made to an extemal rotor lead terminal box for conduit connection.

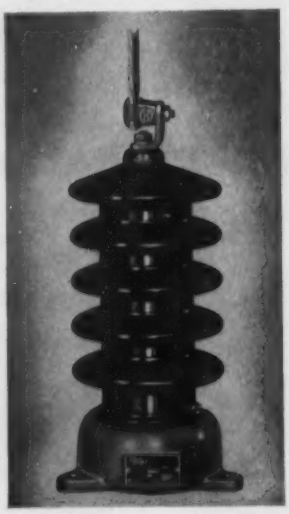
Overhung exciter mounting on synchronous machines is accomplished by means of a split bracket secured to the motor end shield. The bracket permits full accessibility to the capsule bearing. In addition the upper halves of both bracket and end shield can be removed for access to motor windings without disturbing the exciter or the capsule bearing housing.

The new construction is inherently dripproof and is available in splashproof enclosure. Sleeve or antifriction bearings may be utilized as required. End-shield bearing construction is standard for ratings up to approximately 1 hp per rpm for most applications, the manufacturer states.

For Additional Information
Fill in the Coupon on Page 48

Thorex RM Arrester

(2) Ohio Brass Co., Mansfield, Ohio

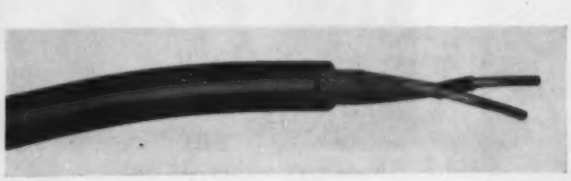


A new valve-type Thorex lightning arrester for protection of equipment with low impulse insulation strengths is intended for use on motors, generators, synchronous condensers and the a-c side of rotary converters as well as dry-type transformers and older pieces of oil-insulated apparatus.

This Thorex RM (rotating-machinery) is identical in appearance to the Thorex MP (multipurpose) arrester. It is said to have exceptionally low sparkover and IR discharge voltage characteristics. The porcelain top construction permits closer spacing and reduced mounting clearance. For indoor use, or within weatherproof enclosures where the water-shed action of the petticoats is not a factor, it may be mounted in any position—upright, horizontal or inverted.

The manufacturer points out that maximum arrester protection may be required on some older oil-filled transformers and on machinery such as generators and motors when insulation strength is limited because of space restrictions and they are connected to exposed overhead transmission or feeder lines.

The Thorex RM arrester is available in 14 different line to ground voltage ratings from 3 to 27 kv. These arresters may be used in conjunction with parallel-connected wave-sloping capacitors to gain maximum protective characteristics, it is stated.



Rubber-Jacketed Portable Cord

(3) Western Insulated Wire Co., 2425 E. 30th St., Los Angeles 58, Calif.

A utility grade portable cord called Rancho is being made in two types—S, 600 v, and SJ, 300 v. Type S comes in sizes 18 through 10 with two, three or four conductors. Type SJ is made in sizes 18 and 16 with two or three conductors. These cords have a rubber outer jacket and rubber insulation; bear the Underwriters' label. Inquiries to the manufacturer should be addressed to Murray H. Owen.

it's time for a new meter...

when Mrs. Forbes...

gets her automatic laundry

Better look at the Forbes' meter—it's probably inadequate. It was never designed to measure a load like this. It may run slow on heavy loads, or it may burn out.

The Sangamo J2, the meter with straight-line accuracy up to 100 amperes, will prevent lost revenue. The J2 has adequate capacity to carry 100 amperes continuously without overheating and sufficient torque to accurately measure even the lightest load.

The J2 is *the* slow-speed meter that makes fewer revolutions per kilowatt-hour—bearings last longer.

When you buy new meters to handle today's growing use of electricity, protect your investment by choosing a meter with plenty of reserve capacity for continuously growing loads.

Choose the new Sangamo J2—the first . . . and finest . . . 15 ampere meter with 100 ampere capacity.

A METER WITH STRAIGHT LINE ACCURACY

UP TO 100 AMPERES

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS

IM54-6

You just can't miss with

Tiger Brand

Electrical Wire and Cable

Varnished Cambric

Tiger Brand Varnished Cambric Cable is the most economical way to transmit large blocks of power short distances.

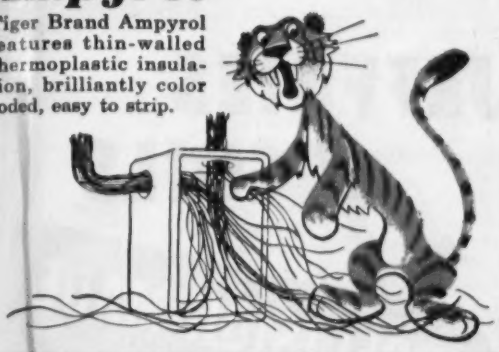
Amerclad To withstand physical abuse, moisture, sun and oil, use Tiger Brand Amerclad for all sorts of portable equipment.

Amerbestos Tiger Brand Amerbestos is a true *quality* heat resistant material. The asbestos is *felted* for greater durability.

Submarine For underwater power distribution, there's a Tiger Brand Submarine Cable to withstand any operating condition.

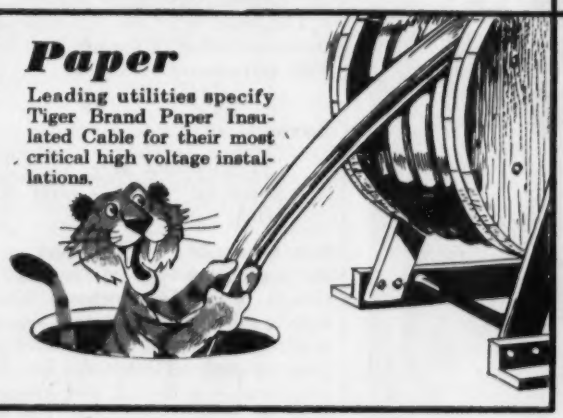
Ampyrol

Tiger Brand Ampyrol features thin-walled thermoplastic insulation, brilliantly color coded, easy to strip.



Paper

Leading utilities specify Tiger Brand Paper Insulated Cable for their most critical high voltage installations.



American Steel & Wire *specializes* in wire and cable that must withstand abusive service. No matter what kind of operating condition you may have, there is probably a *standard* Tiger Brand Wire or Cable that will give you better service than you ever dreamed of.

Send the coupon and outline your problem. We'll see that you get service—*fast.*

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

A STANDARD TIGER BRAND CABLE FOR EVERY SPECIAL JOB

- asbestos wire and cable
- mold cured portable cord
- aerial, underground and submarine cable
- shovel & dredge cable
- paper & varnished cambric cable
- machine tool & building wire
- special purpose wire & cable

SEND THE COUPON

American Steel & Wire
Room JE-84, Rockefeller Building
Cleveland 13, Ohio

● Please give me more information about Tiger Brand Wire & Cable for .....

Name.....
Firm.....
Address.....
City.....State.....

U·S·S Tiger Brand ELECTRICAL WIRE & CABLE

UNITED STATES STEEL

JEFFRIES COILS

PRECISION-MADE and TESTED...

to your **SPECIFICATIONS**

Whatever your coil need – from the smallest relay coil to the largest "Special Application" types, JEFFRIES can meet your requirements.

Offering over 30 years experience in the production of *custom-made* coils to exacting specifications, JEFFRIES combines modern mass production techniques with the latest precision equipment to produce the finest coils available.

Rigid quality control standards, constant supervision and precision craftsmanship, *guarantee* every JEFFRIES coil to meet requirements, *as specified*, and give the ultimate in dependable performance. Every coil tested – no spot checks.

Prompt quotations, minimum cost and *quick delivery* are but a few of JEFFRIES outstanding services. Send your coil specifications direct to JEFFRIES for immediate quotations.

Jeffries Manufactures Coils for Every Application...

- MAGNET COILS
- RELAY COILS
- SOLENOID COILS
- CHOKES
- TOROID COILS
- MOTOR CONTROL REACTORS

Write for FREE Catalog on our Engineering and Manufacturing Facilities

JEFFRIES TRANSFORMER CO.

SUBSIDIARY OF LEACH CORPORATION

1710 East 57th Street, Los Angeles 58, California

Phone LOgan 8-3436

Service Connectors

(4) Dossert Mfg. Corp., 249-255 Huron St., Brooklyn 22, N. Y.

The new Dosson F split-bolt connector is fabricated from high-strength alloys, with component parts cold formed, and can be used over and over again, its manufacturer states.

Maximum tightening force is effected by high translation of tightening torque, insuring tight contact. Full-length bearing pressure bars avoid conductor crushing and load concentration. The unit has no sharp edges, it withstands high overload, vibration and corrosive influences, it is stated.

The new line was introduced in commemoration of the manufacturer's 50th anniversary.

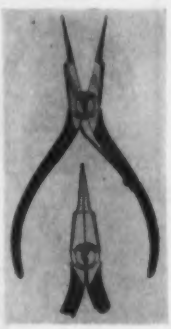
Boxes

(5) Keystone Mfg. Co., 23328 Sherwood Ave., Center Line, Mich.

New 4-in.-square outlet boxes are being made with ½-, ¾- or combination ½- and ¾-in. knockouts. According to the manufacturer, specially designed knockout dies assure fast, free removal, although the knockouts are securely attached and require a force of 20 psi for removal. The boxes are stamped from 14-gage code steel; are available in galvanized or painted aluminum metallic finish.

Needle-Nose Plier

(6) Mathias Klein & Sons, 3200 Belmont Ave., Chicago 18, Ill.



Designed for precision work, this plier has an extra long needle nose, severely tapered to a point less than 1/16 in. A replaceable tempered steel spring keeps tool in open position. The plier is forged from high-grade tool steel, individually fitted, tempered, adjusted and tested, the manufacturer states. Over-all length is approximately 6¾ in. Designations are: No. 301-6-SCP-L, plier with leaf spring; No. 301-6-SCP, without leaf spring. For pliers with cutters on shoulder, designations are: No. 203-6-SCP-L, leaf spring; No. 203-6-SCP, without leaf spring.

For more data fill in coupon on page 48

STANDARD ENGINEER'S REPORT

DATA

LUBRICANT RPM Delo Supercharged-2

UNIT D17000 diesel engine

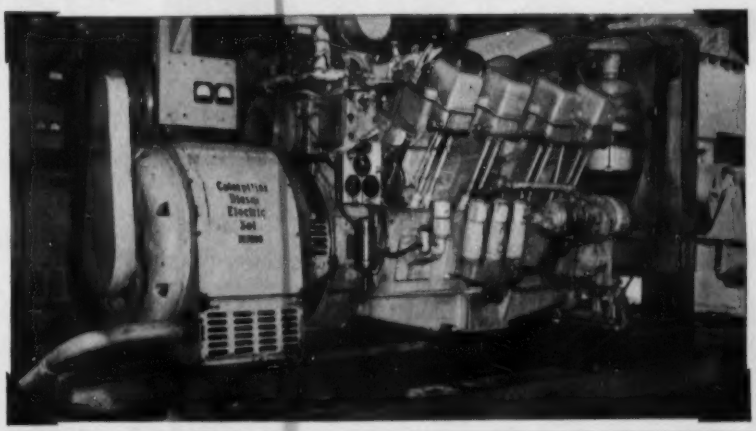
OPERATION Constant operation in extreme temperatures

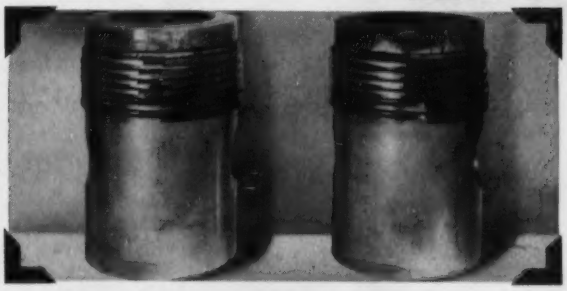
PERIOD 9277 hours

FIRM Diamond Lumber Co., Glenwood, Oregon

Diesel engine "spotless" after 9,277 hours of work!

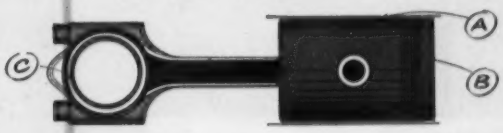
THIS D17000 DIESEL ENGINE worked 17 hours per day in weather that varies from below zero to over 100 degrees. Lubricated with RPM DELO Supercharged-2 Lubricating Oil since installation, it was inspected after 9,277 hours of operation. The engine looked as though it had just been thoroughly cleaned —"spotless" according to the engineer on the job. This is one of six D17000 Cats which was used to supply power for Diamond Lumber Company's mill at Lee's Camp, Oregon. This mill cuts approximately 100,000 board feet of Douglas fir per day.





REPRESENTATIVE PISTONS, exactly as they came from engine after 9,277 hours, show cleanliness of all parts. Wear at top of cylinder liners miked only 0.0015 inch! Con rod and main bearings were all good; valves and valve seats were in excellent condition. The RPM DELO Lubricating Oil in this engine was changed at regular intervals.

How RPM DELO Oils keep engines clean and prevent wear



A. Contain special additives that provide metal-adhesion qualities...keep oil on parts whether they are hot or cold, running or idle.

B. Anti-oxidant resists deterioration of oil and formation of lacquer...prevents ring-sticking. Detergent keeps parts clean, helps prevent scuffing.

C. Special compounds stop corrosion of any bearing metal, and oil foaming in both wet and dry sump engines.

There is an RPM DELO Oil to meet every heavy-duty engine operating condition.

FREE BOOKLET on the RPM DELO Oils gives you complete information. Write or ask for it today.

RPM DELO LUBRICATING OILS

STANDARD TECHNICAL SERVICE checked this product performance. For expert help on lubrication or fuel problems, call your Standard Fuel and Lubricant Engineer or Representative; or write Standard Oil Company of California, 225 Bush St., San Francisco.

TRADEMARK "RPM DELO" REG. U.S. PAT. OFF

STANDARD OIL COMPANY OF CALIFORNIA

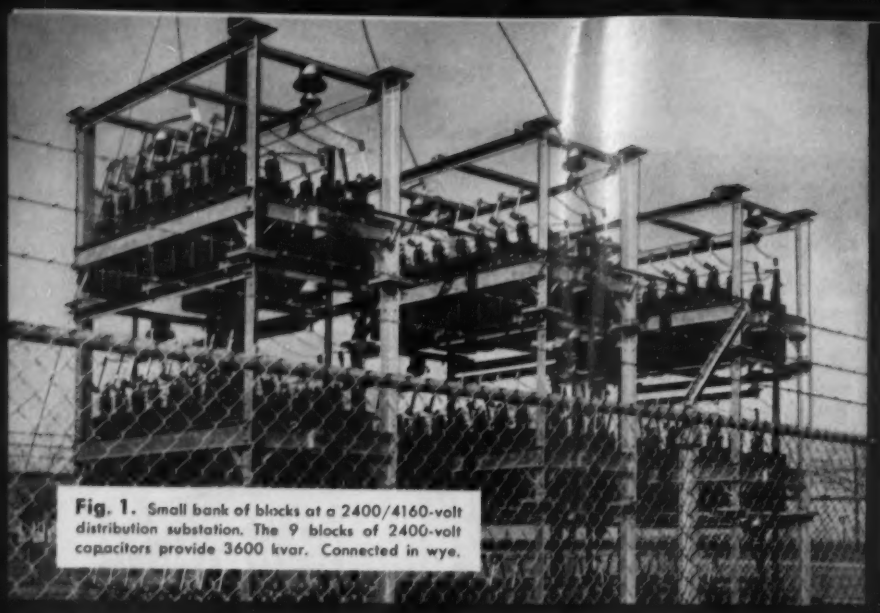


Fig. 1. Small bank of blocks at a 2400/4160-volt distribution substation. The 9 blocks of 2400-volt capacitors provide 3600 kvar. Connected in wye.

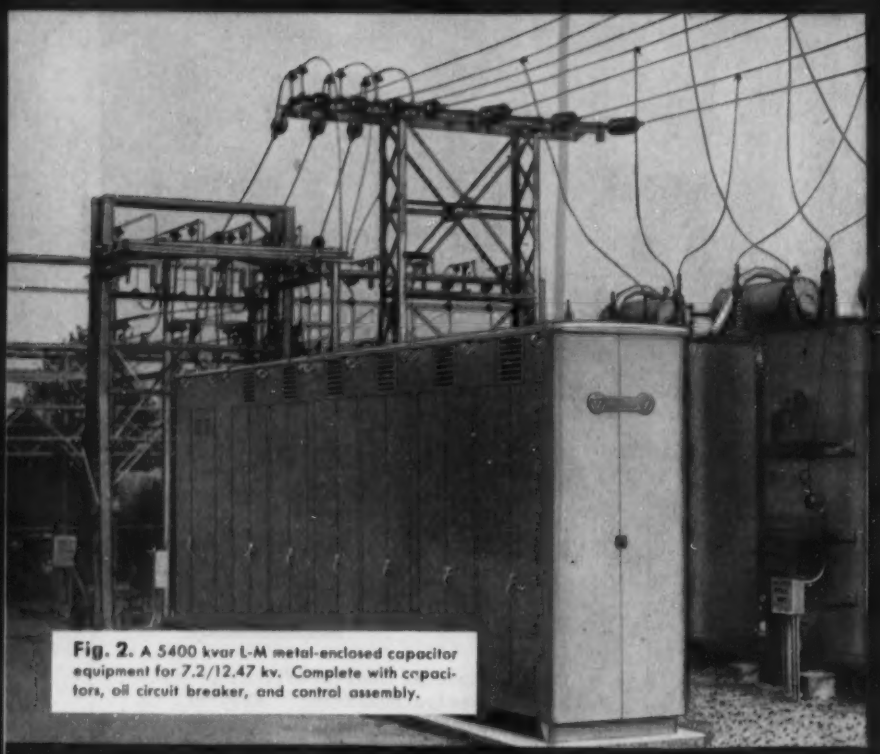


Fig. 2. A 5400 kvar L-M metal-enclosed capacitor equipment for 7.2/12.47 kv. Complete with capacitors, oil circuit breaker, and control assembly.

Fig. 3. A 300 kvar switched capacitor rack serving a suburban area. Note the simple, compact arrangement and accessibility of the entire assembly.

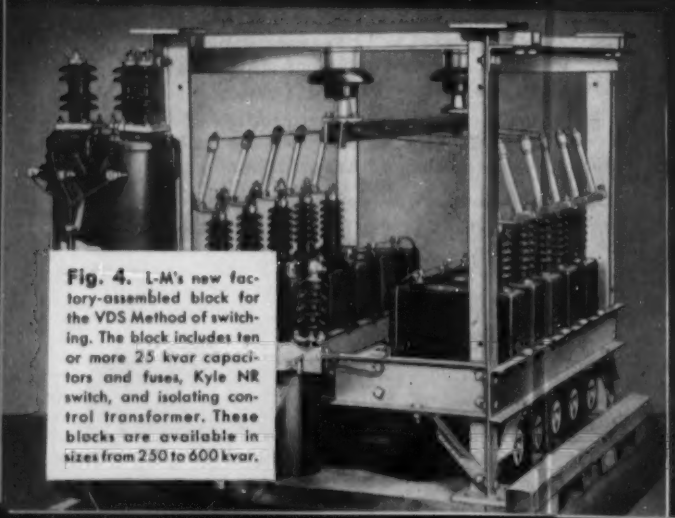
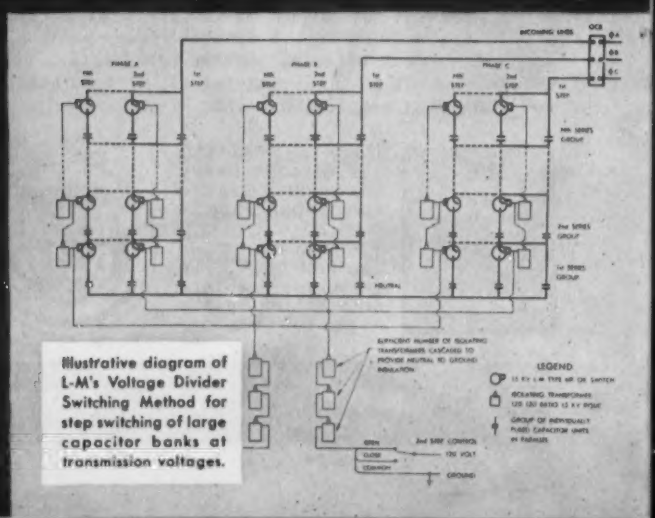


Fig. 4. L-M's new factory-assembled block for the VDS Method of switching. The block includes ten or more 25 kvar capacitors and fuses, Kyle NR switch, and isolating control transformer. These blocks are available in sizes from 250 to 600 kvar.



Illustrative diagram of L-M's Voltage Divider Switching Method for step switching of large capacitor banks at transmission voltages.

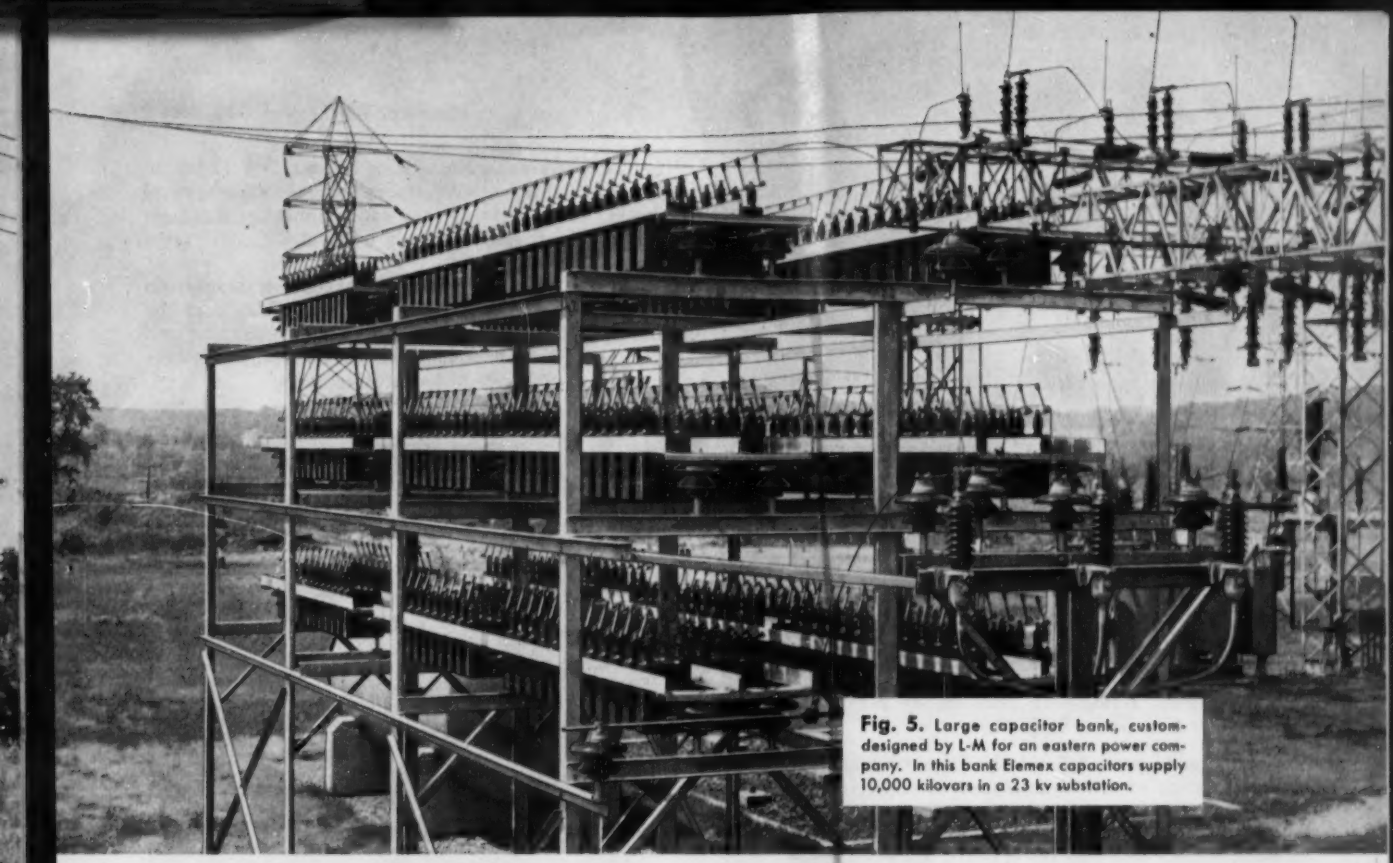


Fig. 5. Large capacitor bank, custom-designed by L-M for an eastern power company. In this bank Elemex capacitors supply 10,000 kilovars in a 23 kv substation.

L-M Offers Completely Engineered Capacitor Bank Installations

L-M's service includes a full line of equipment and experienced custom designing of any size of bank for transmission or distribution lines.

By **N. K. DELANEY**
Manager of Capacitor Sales
Line Material Company

The application of capacitors to distribution and transmission lines requires careful consideration of both electrical and economic factors. A large amount of information on equipment, protective schemes and cost must be available to the utility engineer for an intelligent decision.

Line Material Company is prepared not only to supply you with such information, but also to cooperate with utility engineers in working out the most satisfactory capacitor-application designs. This includes the best possible protective and step-switching schemes for any size and type of bank for operation at transmission or distribution voltages.

L-M's complete line of capacitor equipments includes pole-mounted racks factory-assembled blocks, metal-enclosed equipments, and custom-designed field-assembled banks.

Another and exclusive service to the industry is the L-M Voltage Divider Switching Method (patent applied for). This is an automatic switching scheme for large multi-step capacitor banks at transmission voltages. It involves substituting a number of low-cost 15 kv oil switches for the large circuit breakers on all but the first step on multi-step banks up to 230 kv. The VDS Method saves about 40% of the cost of breakers alone. A special block assembly has been designed to simplify installation of the VDS Method.

Ask Us For Complete Information

We would appreciate an opportunity to tell you about our products, and about our Capacitor Bank Engineering Service. Ask the L-M Field Engineer to discuss it with you; or write Capacitor Sales, Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

L-M Capacitor Equipments

Factory-assembled blocks in complete range of NEMA-standard sizes and ratings. Blocks save time and money in assembling large banks. (Fig. 1)

Metal-enclosed capacitor equipments in all NEMA-standard distribution voltage sizes and ratings. (Fig. 2)

Factory-assembled racks for pole-mounted banks. Sizes with 15 kv spacing up to 300 kvar switched and 375 kvar unswitched assemblies with 25 kvar units. (Fig. 3)

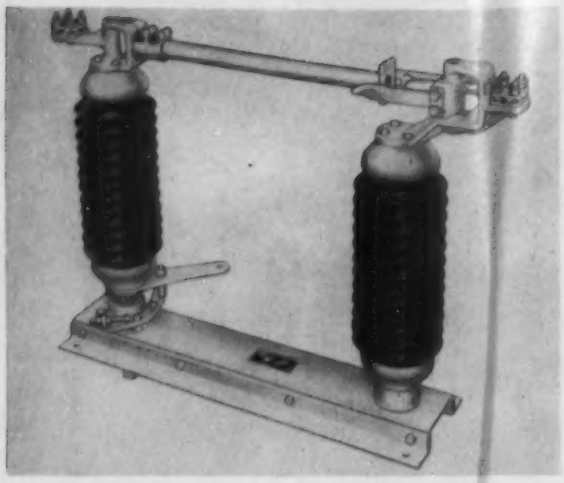
VDS Method factory-assembled block for large multi-step capacitor banks, an L-M-exclusive method that reduces costs of switching equipment. (Fig. 4)

Custom-designed field-assembled banks with recommendations for the protective and switching schemes. (Fig. 5)

LINE MATERIAL

188

Elemex® Capacitors



Flexless Side Break Switch

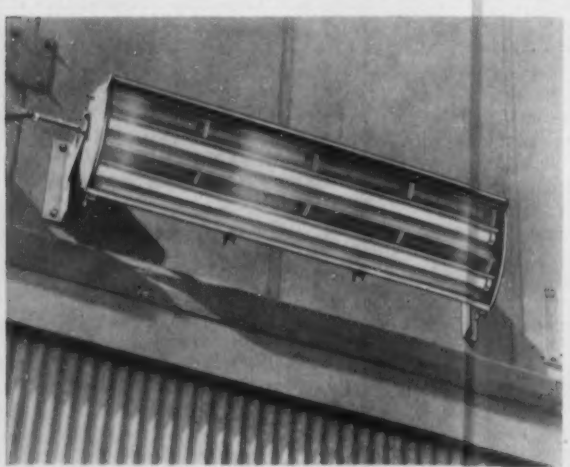
(7) R&IE Equipment Division of I-T-E Circuit Breaker Co., Greensburg, Pa.

This redesigned type A-6 side break air switch features characteristics of the manufacturer's vertical break switches. A sealed pressure hinge contact has replaced the flex connection at the swivel hinge terminal, a vital point on two-insulator switches, the manufacturer points out.

The same sealed pressure hinge contact is used on the new swivel high-pressure contact jaw. Formerly a toggle joint was used in the blade for making a pressure contact. Fingers of the jaw are designed with a combination copper and beryllium copper for high conductivity, strength and resiliency, it is stated.

Both hinge and jaw construction are identical in parts with those of the manufacturer's vertical break switches.

The new type A-6 is built in voltages from 7,500 through 115,000, with current ratings from 400 through 1,200 amp.



F Light for Ramp and Service Areas

(8) Line Material Co., Milwaukee 1, Wis.

A two-lamp fluorescent luminaire, designed for outdoor applications that require high illumination but low average brightness, has a main beam output of about 4,100 candle power and an average unit brightness of 3 candle power per square inch.

It is a 245-w unit accommodating 100-w 6-ft T-12 lamps. It has individual reflecting surfaces for controlling vertical distribution of the light and the entire luminaire is adjustable so that the main beam may be rotated ± 45° from horizontal.

All metallic parts are aluminum, except for nonferrous fittings. The cover is a translucent plastic, hinged at the top and latched at the bottom to facilitate relamping and maintenance. Cover gaskets make the luminaire weatherproof and bugproof, the manufacturer states.

Taping Gun

(9) Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn.

Plastic tape dispensed by a new taping gun is claimed to speed up electrical harness wrapping by from two to ten times. The gun was designed for ⅜-in.-wide Scotch brand plastic electrical tape No. 33.

This model E-2 gun weighs less than 20 oz with a 36-yard roll of tape in the circular magazine, the manufacturer states, and it is possible to bundle the wires and cut the tape in a single motion taking approximately one second.

In use, the tape protruding from the end of the gun is stuck to the wires by the thumb, threaded around the bundle by the curved tip and then cut with a touch of a thumb button. The end of the tape is pressed down to complete the wrap. The slender, 10½-in. curved tip serves as a "needle" to thread the tape around wires on a cable layout board or in spots that would be difficult to reach, the manufacturer points out.

With the exception of the grip and cutting button, which are molded from high-impact styrene plastic, the taping gun is of all-steel construction.

Packaged Air-Source Heat Pump

(10) General Electric Weathertron Department, Bloomfield, N. J.

Said to be the largest packaged air-source heat pump on the market, the new Weathertron for larger homes and commercial buildings is powered by two modulated 5-hp compressors and will handle up to 3,000 cu ft of air per minute. It features a completely sealed hermetic refrigeration system warranted for five years.

The new unit, designated the 98B, supplements the present line of 3- and 5-hp models.

It's Fun to Be FIRST!

Even though Simplex has proudly announced many "Firsts," somehow the thrill never wears off. That's why we're so proud of our latest "First," announced last fall. It is the approval by the Underwriters' of Simplex WD-75 Wire as "Type RHW." It is the first wire to bear this approval.

Obviously a new product should do something for you that an old one doesn't do. Here's what Simplex WD-75 Wire will do:

- It can be used as general-purpose wire in BOTH wet or dry locations at a copper temperature of 167° F. (75° C.). No wire was approved to do that before.
- Depending on the ambient temperature, Simplex WD-75 can carry from 18 to 52% more amperes in the same size conductor in wet locations than Type RW Wire. That's good — saves you money, too.

Simplex WD-75 is gentle with remodeling costs, too. If your conduits are filled now to their rated capacity, and if additional amperes are needed, *don't* tear out your conduits. You need only pull out your present wire and pull in Simplex WD-75.

Simplex makes Type RHW Wire as ANHYDROPRENE WD-75 for use in conduits and ducts, and ANHYDREX WD-75 for direct burial in the ground. Simplex folder No. 1018 has more details about this wire. Why don't you write for it today?

Simplex **ANHYDROPRENE WD-75**
ANHYDREX WD-75

SIMPLEX WIRE & CABLE CO., 79 Sidney Street, Cambridge 39, Mass.

DROP-FORGED for GREATER STRENGTH

BTC

M.P.L. Aluminum

SUSPENSION CLAMP

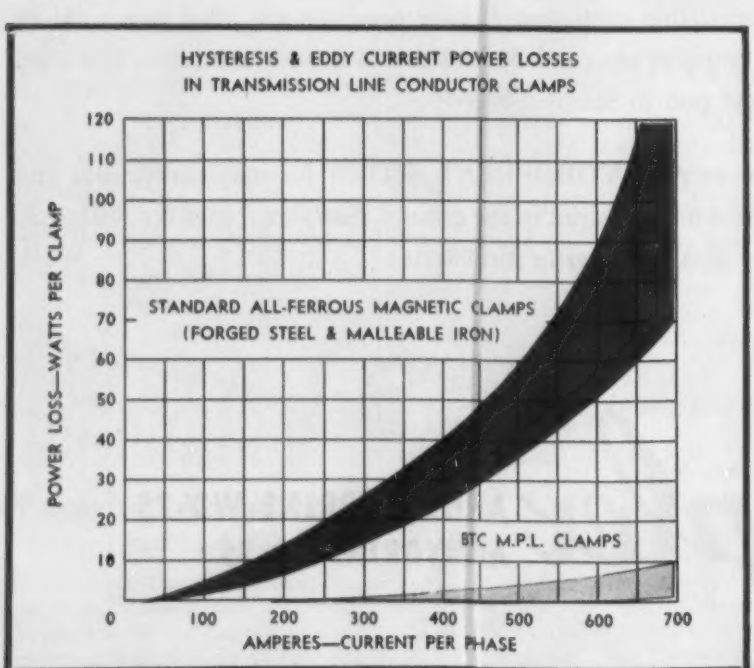
for A.C.S.R.
and All-Aluminum Conductors

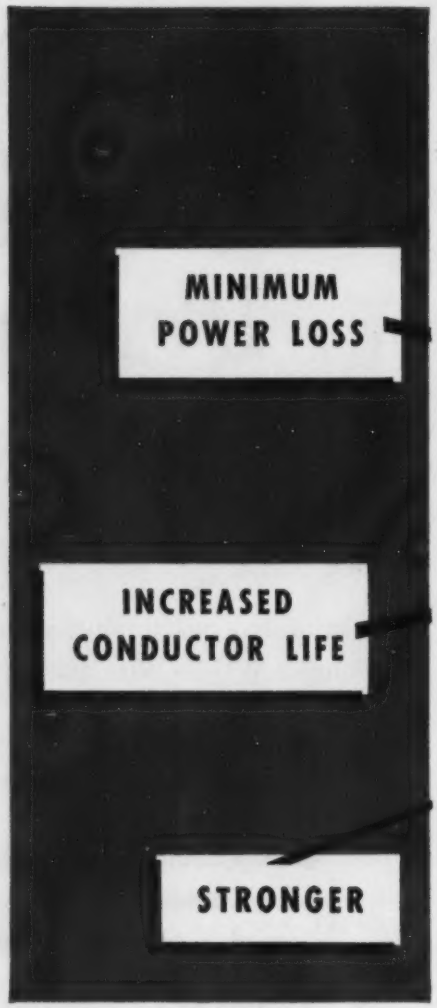
MINIMUM POWER LOSS

MPL The use of non-magnetic Aluminum Alloy Clamp Body reduces eddy current and hysteresis losses to a minimum . . . prevents temperature rise in the clamped section of the conductor, which will operate at lower temperature than in the span.

CONSIDERABLY STRONGER

Forgings, in any metal, are employed where better strength, soundness and finish are required than can be obtained by other processes. Forging produces a fine, close-grained structure, with the grain flow following the contour of the part and with optimum mechanical properties and ability to withstand severe loading, sudden shock and frequent reversal of stress.



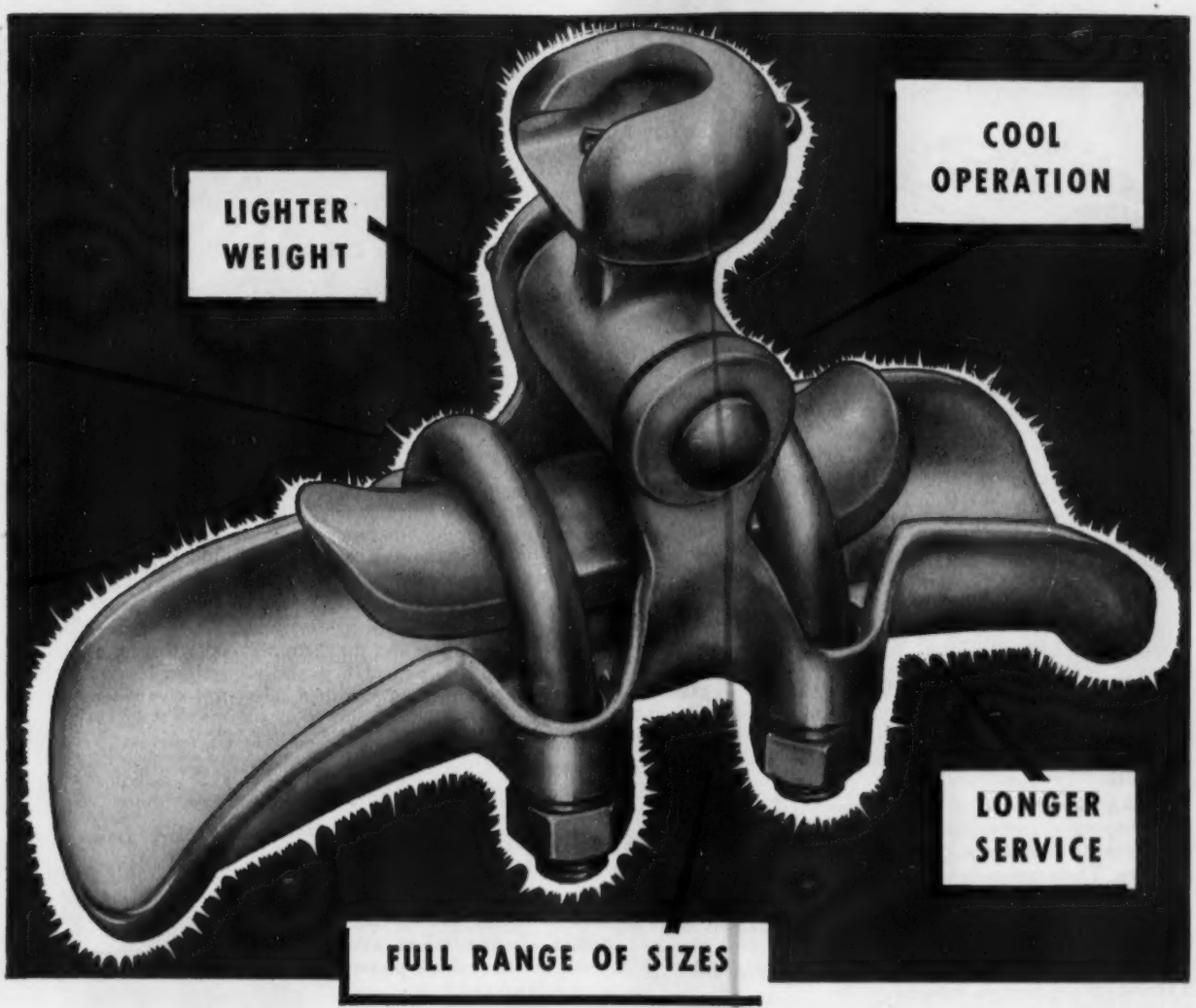


The BTC Clamp Body is FORGED Aluminum alloy, the strongest recommended for the purpose, fully heat-treated to develop maximum mechanical properties.

In the heat-treated condition, the ultimate strength and hardness is more than twice . . . and the yield strength and endurance limit more than three times . . . that of alloys used in other processes. The more-than-adequate catalouged strength ratings of BTC Clamps are conservative and are exceeded in actual tests.

LIGHTER WEIGHT

Heavy sections or reinforcing ribs, necessary in other materials to develop desired strength and prevent collapse or breakage of the clamp under clamping U-Bolt pressure, are not required in forged clamps. Undesirable weight is eliminated without sacrifice of strength.



INCREASED CONDUCTOR LIFE

The light weight and generous longitudinal radius of the conductor seat minimize the effects of conductor vibration. The conductor is not bent over a small radius at any point.

Clamping pressure is greatest at the center, gradually decreasing toward each upswept end of the keeper. Clamp and Keeper ends are liberally bell mouthed and beaded to prevent conductor damage and formation of corona.

The conductor is fully supported in the clamp body. There are no open pockets at U-Bolt holes to allow distortion of the conductor under clamping pressure.

LONGER SERVICE

The superior strength insures against failure under severe loading. The greater hardness prevents excessive wear at points in contact with the supporting pin.

The close-grained, non-porous structure of the forged clamp body effectively prevents the destructive internal seepage of corrosive elements, a cause of failure in some transmission line fittings produced by other processes.

FULL RANGE OF SIZES

BTC offers a choice of exactly the right clamp for each size of A.C. S.R. or all-aluminum conductor. The close dimensional fidelity of the die-forged and die-formed parts makes unnecessary any bore size allowance for manufacturing variations in the clamps.

Specify BTC MPL Aluminum Suspension Clamps from your insulator manufacturer. They are an important part of BTC's complete line of forged transmission line hardware.

Sold Through Your Insulator Manufacturer Only

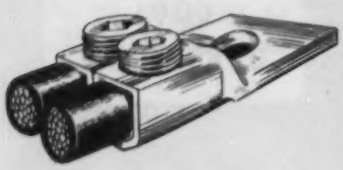
Drop Forged BTC *Hi-Line Hardware*

The **BREWER-TITCHENER** *Corporation*

Cortland · New York

Twin Connector

(11) Ilsco Copper Tube & Products Inc., Mariemont Ave., Cincinnati 27, Ohio



This twin connector, MU, is designed to replace a larger single connector; accommodates two wires; comes in three sizes — MU 250 for 250 MCM to 6 wire range, MU 350 for 350 to 4 wire range and MU 600 for 600 MCM to 4/0 wire range. The manufacturer states that this connector is very compact, low in weight and as narrow as two maximum conductors.

It is made from heavy, extra hard drawn seamless copper tubing by the manufacturer's process. The copper is of 100% electrical conductivity assuring low heat rise, it is pointed out. MU has been tested by Underwriters' Laboratories and the Canadian Standards Assn.

Waterless Home Cooling

(12) General Electric Home Heating and Cooling Department, Bloomfield, N. J.

Waterless home cooling is possible with a new air-cooled condenser that can be located remote from the cooling unit in crawl space, attic, garage or backyard. Because of the remote location, ducts are not needed to carry air from the condenser.

Each of the new air-cooled units consists of two sections. The evaporator section contains the cooling coil, hermetic compressor, electrical equipment and high and low-pressure switches. These components are mounted on a framework that will slide out for easy servicing. The other component, the air-cooled condenser section, contains the condenser coil, blower and liquid receiver.

The condenser package is 2 ft high, 3 ft deep and 2 or 3 ft wide depending on capacity.

At present the manufacturer is marketing the unit in 2-, 2½- and 3-ton sizes, with 1½- and 5-ton models to be available later. This equipment is rated on the basis of cooling capacity rather than horsepower input, it is stated. Air-cooled units provide only about ¾ ton of cooling capacity per horsepower, according to the manufacturer.

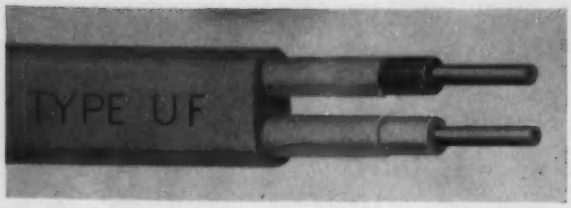
These units are designed for use with the manufacturer's Air-Wall system of air distribution or with any soundly designed duct system, it is stated.

Tellurium Alloy Lead Sheath

(13) John A. Roebling's Sons Corp., 640 S. Broad St., Trenton, N. J.

Full commercial production of tellurium alloy lead sheath cable, under license from General Electric, has been reported by Roebling. This type of sheath is said to possess stabilized bending and creep-resistant properties of superior quality.

Extrusion in the Roebling factory has shown that ease of control of the new alloy is one of its desirable characteristics, the manufacturer reports. It is extruded on a standard lead press and allows a wide range of heat treatments. At joint end wipes and other locations application of heat does not destroy its desirable characteristics, it is stated.



Underground Feeder Cable

(14) Triangle Conduit & Cable Co. Inc., New Brunswick, N. J.

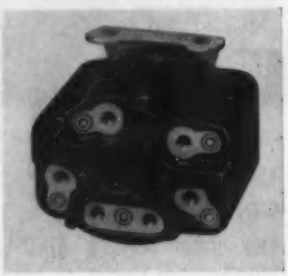
A new type of UF feeder cable for underground wiring derives its corrosive resistant characteristics from tough thermoplastic insulation, its manufacturer states. On the multiconductor cables a fibre glass wrap separates the individual conductor insulation from the cable jacket, adding strength and making stripping easier, it is pointed out.

This cable can be buried directly in the ground as feeders or branch circuits when provided with overcurrent protection; snaked inside masonry block walls; imbedded in plaster or in a shallow chase in masonry block walls when provided with adequate mechanical protection; used for exposed or concealed wiring in dry, wet or corrosive locations.

This cable is available with single conductor in sizes No. 14 to 4 and with two and three conductors in No. 14 to 10, solid or stranded. Type UF is also recognized for use as type NMC, nonmetallic sheathed cable, corrosive resistant, it is stated.

Potential-Type Motor Starting Relays

(15) R-B-M Division of Essex Wire Corp., Logansport, Ind.



The newly developed 91255 type potential motor starting relays are used to start single-phase capacitor-type motors where it is impractical or impossible to use a centrifugal switch. These units are totally enclosed. Snap-action mechanism gives positive contact action under normal operation, it is stated. Relays may be mounted in any position and have readily accessible wiring terminals. They come with extra single and double dummy terminals.

A normally open contact rated at 1 hp, 115 v, 1 to 1½ hp, 230 v can be added at the factory for sequence starting of dual motor air conditioners. This feature may be used also to prevent starting of auxiliary motor until after start winding cuts out in compressor motor.

The general-purpose shunt version (91256 type) comes single pole, normally open, single pole, normally closed or single pole, double throw. Maximum coil inrush, 12 va, 10 va sealed.

For Additional Information and Manufacturers' Bulletins Fill in the Coupon on Page 48

thousands already using it to help Plan Better Industrial Lighting...

HELPS PLAN

Thousands of architects are using it to help them plan the type and kind of lighting systems which will best fit the particular industrial building they are designing. They also use it to show their clients the reasons why the recommendations call for RLM-certified units.

HELPS BUY

It gives buyers by the thousands, such as industrial executives, operating chiefs or plant maintenance heads, dollars-and-cents reasons why RLM-labeled lighting units are the best buy in terms of quality, performance and sustained high lighting efficiency.

here's how this new "Blue-Cover" RLM SPECIFICATIONS BOOK is already helping thousands:

HELPS SELL

It enables thousands of electrical contractors, electrical wholesalers, etc. to point out to their customers EXACTLY WHAT THEY ARE GETTING for their lighting dollar. It shows why the RLM Label on a lighting unit takes the place of over 1,500 words of specifications!

HELPS RECOMMEND

To thousands of purchasing agents it serves as a valuable yardstick in their evaluation of industrial lighting . . . an accurate guide to sound recommendations based on a comparison of the merits of different lighting units. It tells them what to look for and how to estimate lighting equipment value.

HELPS SPECIFY

To thousands of lighting men whose job it is to specify lighting units, it puts at their fingertips *21* different RLM Specifications, many complete with light distribution curves and coefficient of utilization tables. All are ready-made for use when drawing up lighting plans, layouts or recommendations.

This newly-revised "Blue-Cover" edition of the RLM Specifications Book of Industrial Lighting Units has just been made available to everyone who buys, sells and specifies industrial lighting equipment. Already thousands of copies have been requested and put to productive use in the planning of better industrial lighting.

NEW "UPWARD LIGHT" UNITS

In case you have not yet sent for your copy, be sure to do so before the supply is exhausted. This latest "Blue-Cover" edition of the RLM Specifications Book has been expanded to 52 pages, covering over 83 sizes and types of RLM-certified industrial lighting units. Featured are new specifications which embrace 15 variations of three new "Upward Component" RLM Semi-Direct Fluorescent Units which direct from 20% to 30% of the light upward. Also incorporated are important revisions and clarifications of existing specifications including new tables of typical coefficients of utilization and lighting distribution curves.

A request on your letterhead will bring your copy of this new RLM Specifications Book, as well as the pocket-size "RLM Questions and Answers" booklet, by return mail, without cost or obligation. Send now for this invaluable reference work to help you plan better industrial lighting!

RLM Standards Institute, Suite 815, 326 West Madison Street, Chicago 6, Illinois.

R-352

MANUFACTURER'S NAME
COMPLIANCE WITH
RLM
ELECTRICAL TESTING LABORATORIES, INC.

RLM STANDARDS INSTITUTE
INCORPORATED
The letters RLM stand for Reflector and Lighting Equipment Manufacturers

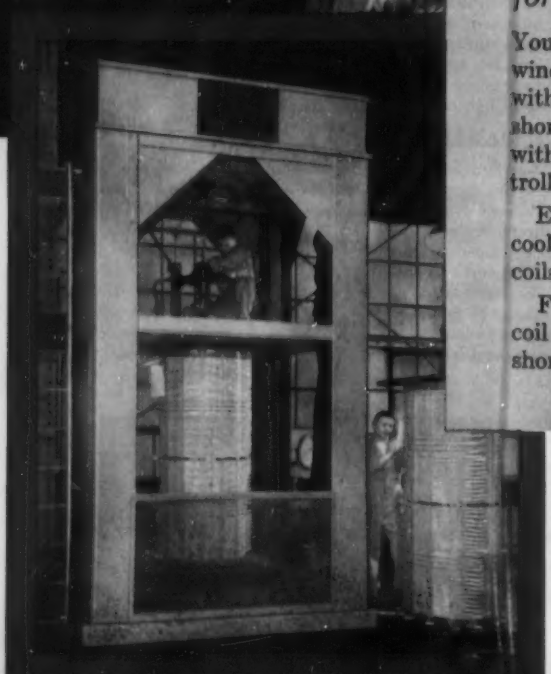
How NEW DESIGNS

NEW *No-Splice Continuous Winding for High Voltage Coils*

You get high inherent mechanical strength from continuous winding of high voltage coils that are wound on solid barriers without splicing. They are well-balanced to prevent high short-circuit stresses. Photo above shows how turns are wound with exact degree of tension to make a tight coil. Carefully controlled tension eliminates any possibility of damaging insulation.

Each coil is well ventilated with each conductor exposed to cooling oil. A special snap-lock spacer locks in place between coils to form a uniform cooling duct.

Final step is shown at left. A hydraulic press compresses coil stacks to exact dimensions for further protection against short-circuit stresses.



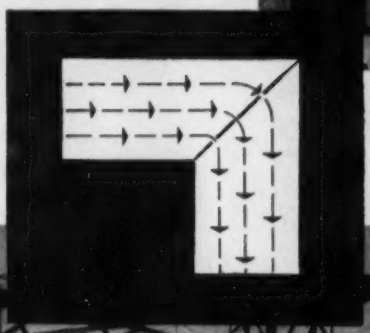
ALLIS-

Improve Power Transformers

New continuous windings on solid barriers eliminate all splices and assure high mechanical strength of coils on Allis-Chalmers small power transformers . . . snap-lock spacers provide uniform cooling ducts. New mitered core design gets full advantage from modern core steels, reduces exciting current. Here's the full story:

NEW *Mitered Core Design Uses Cold-Rolled Steel*

Transformer exciting current is reduced 50% when mitered core design permits use of best properties of cold-rolled steel. Steel is cut and stacked to take advantage of orientation so that flux flows easily. Mitered core also permits reduction in weights and dimensions.



MITERED DESIGN MINIMIZES AIR GAP between joints, keeps exciting current low. Steel is cut and stacked to take advantage of orientation properties of core steel.

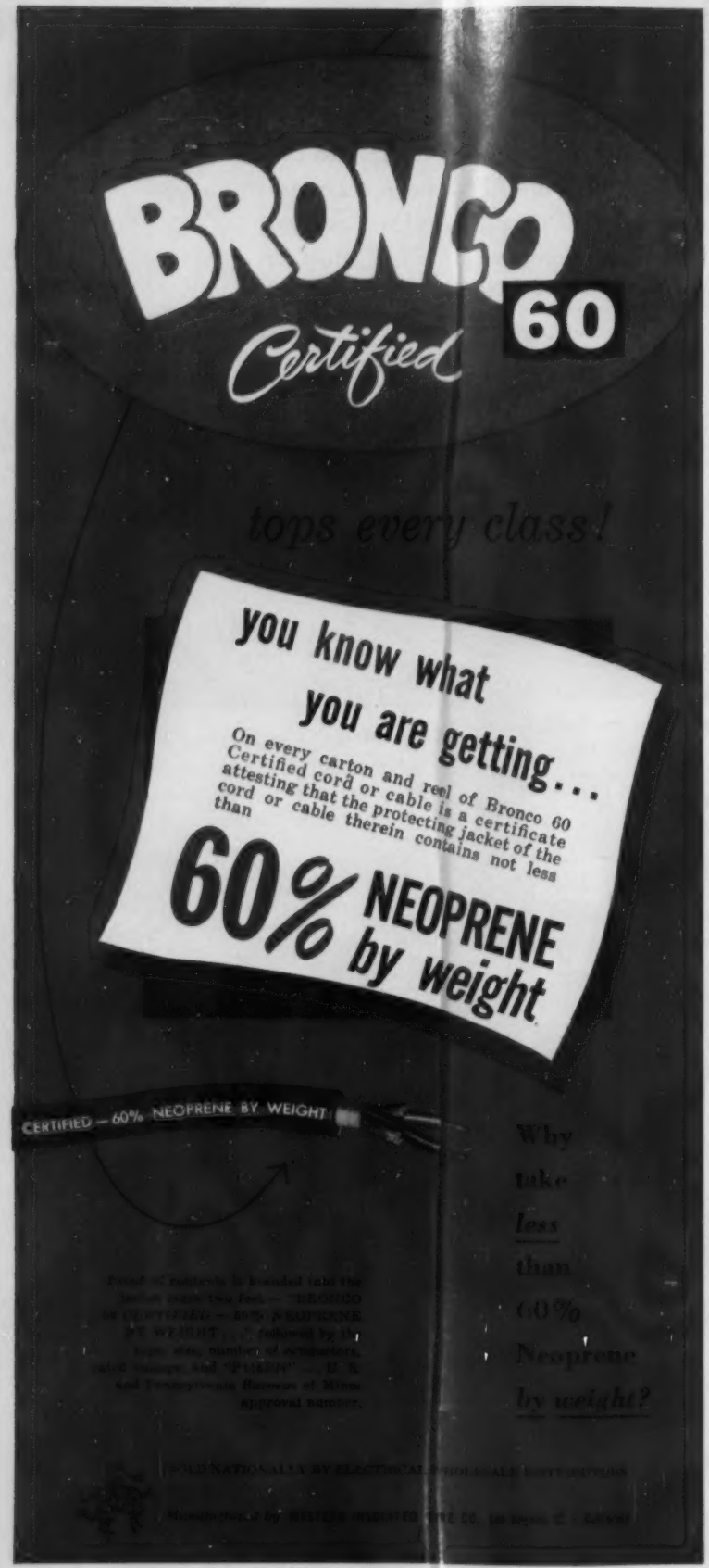
Next time...

you consider power transformers for your system, it will pay to investigate the advanced design and expert workmanship Allis-Chalmers provides. Call a transformer expert from the nearest A-C office or write Allis-Chalmers, Milwaukee 1, Wisconsin for more information.

A-4408

CHALMERS

A-C ALLIS-CHALMERS


BRONCO 60
Certified
tops every class!
you know what you are getting...
On every carton and reel of Bronco 60 Certified cord or cable is a certificate attesting that the protecting jacket of the cord or cable therein contains not less than
60% NEOPRENE by weight
CERTIFIED — 60% NEOPRENE BY WEIGHT
Why take less than 60% Neoprene by weight?

Fitting

(16) Gedney Electric Co., RKO Bldg., Radio City, New York 20, N. Y.

A new offset connector for E.M.T. is designed to eliminate the need for offsetting conduit at the knockout entrances of outlet and switch boxes. It is made of malleable iron to minimize breakage and is hot dip galvanized for long service life, the manufacturer states. It comes in a range of sizes from ½ in. to 2 in.

Signal Arrester

(17) Line Material Co., Milwaukee 1, Wis.

This new valve-type signal arrester provides lightning protection for a-c circuits of 0-175 v or d-c circuits of 0-30 v. Designated type L, it furnishes consistent sparkover, high discharge capacity and low IR drop. Designed primarily for protecting railway signal systems, it may be applied to other low-voltage systems, such as fire alarm, remote metering, airport lighting and relay circuits.

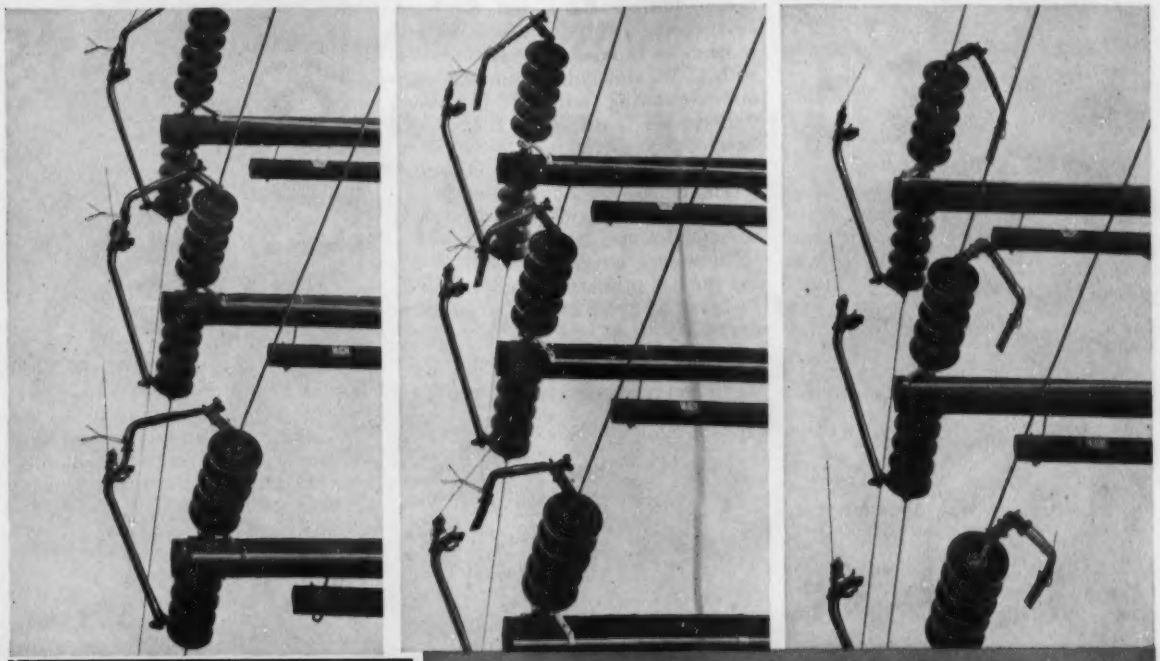
Hand Tachometer

(18) General Electric Co., Schenectady 5, N. Y.

A new portable hand tachometer features a scale-changing device that is said to reduce misreading of its various ranges. Three models, each with three ranges, are capable of measuring rotational speeds from 2 to 100,000 rpm and linear speeds from 2 to 10,000 fpm with accessories. Accuracy is plus or minus one per cent of full scale under all conditions, the manufacturer states.

Applications include speed measurement of motors, generators, turbines, lathes, milling machines, planer beds, conveyor belts and all continuous webs.

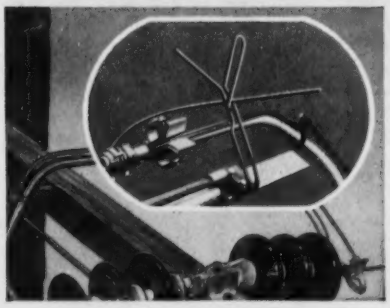
KPF Type S switch, vertical mounted, with Quick-Break. *(Left,* switch closed. *Center,* switch opening, Quick-Break still maintaining contact, preventing arc. *Right,* KPF Quick-Break whips free in split-second, preventing establishment of arc). *Photos reproduced from September, 1949* ELECTRICAL WEST.



KPF

AIR BREAK SWITCHES

Standard for nearly half a century



The secret of the system-proved KPF Quick-Break is a heat-treated beryllium copper "cat's whisker" which whips free in a split second as the rotating arm of the switch is opened. The design and extremely high acceleration of the mechanism prevent establishment of an arc. Thus, critical arc length is not a problem. Quickly, simply installed on switches now in use.

2592

Service-proved KPF Quick-Breaks safely drop 40 miles of 60 kv line

Operating engineers tell us KPF switches with the time-tested Quick-Break are the most outstanding air break switch improvement in over three decades.

Before introduction of this simple, sturdy Quick-Break, pole top switching of 69 kv circuits was limited to some 6 miles of line. Now, operating experience of utilities and power companies shows 40 miles of 69 kv line can be dropped with safety.

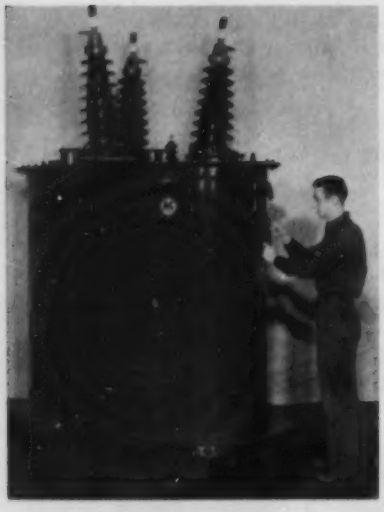
KPF Quick-Breaks, like KPF switches, are simple and ruggedly constructed for long life, trouble-free operation under all weather conditions, economical installation and low cost.

KPF Quick-Break attachments, first developed in 1944, are available for all KPF switches built since 1940.

New catalog gives complete specifications, mechanical details and installation information.

KPF ELECTRIC COMPANY

1624 East Alpine Avenue, Dept. W, Stockton 5, California



Metering Outfits

(19) Allis-Chalmers Mfg. Co., 939 S. 70th St., Milwaukee 1, Wis.

Metering outfits equipped with a new ratio changing arrangement for de-energized operation with an outside handle that can be operated from the ground level are being regularly supplied on the manufacturer's outfit, for current ratings up to 200/400 amp, 25 through 69 kv. The factory should be consulted for ratio changers on 15-kv metering outfits.

It is claimed that the new arrangement makes for quick, easy and safe operations; eliminates time-consuming terminal link changes and permits floor level operation in substation yards.

The new ratio changer has self-aligning contacts with equal and positive pressure. Round point contact against flat stationary contact establishes only one current path, it is pointed out.

Current Transformer

(20) General Electric Co., Schenectady 5, N. Y.

A new butyl-molded miniature current transformer features both window- and bar-type primary construction. Designated the JCA-0, it is designed for operating meters and instruments and may be used on either single-phase two-wire or polyphase circuits.

It is rated at 600 v and is suitable for use on any circuit of 600 v or below. According to the manufacturer, the window-type unit is ideal for operation over a bar-primary conductor on circuits up to its rated voltage.

Two current ratings are available in both models: 200:5 and 400:5 amp. These ratings are obtained in the window-type unit by passing the line conductor once through its window.

ASA accuracy is: 200, 400 amp, 60 cycles, burden B-0.1 and B-0.2 accuracy class 0.3. The device is built to carry its rated current continuously with a 55 C ambient temperature without overheating. With a 30 C ambient temperature it will carry 200% rated current without exceeding the allowable 55 C rise, it is pointed out.

The device can be mounted in any position and is said to be especially suitable for use in small boxes. The window type weighs from 2¼ to 2½ lb; the bar primary from 3½ to 5 lb. Both can be equipped with an auxiliary mounting plate.

Cutouts

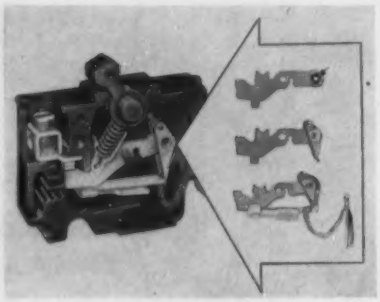
(21) Line Material Co., Milwaukee 1, Wis.

A new line of 100-amp open-type distribution cutouts in voltage ratings of 5.2, 7.8 and 15 kv features standard-duty, intermediate-duty and heavy-duty fuse cartridges, with or without a load break device. Cartridge assemblies in the three duty classes offer interrupting capacities of 3,000, 5,000 and 10,000 amp at 5.2 and 7.8 kv and 2,000, 4,000 and 8,000 amp at 15 kv.

HDO cutouts with the load break device provide positive rupture of links rated through 100 amp and positive interruption of 100-amp continuous current, the manufacturer states. The new cutouts also are available with 200-amp switch blades.

Corten hardware is used on the new HDO line. In addition to the standard single-insulator mounting, the cutouts are available with either post-type or BIL insulator mounting.

For more data fill in coupon on page 48



Breakers

(22) Federal Electric Products Co., Hartford Division, 1429 Park St., Hartford, Conn.

A new line of type AB case circuit breakers was designed primarily for circuit protection in industrial plants and commercial buildings. These breakers operate on a thermal-magnetic principle that will pass temporary light overloads but will trip instantaneously on heavy faults.

Because of the trip-free mechanism these breakers cannot be held closed against a fault, it is pointed out. When the fault is cleared, service is restored by resetting the handle to the on position. The danger of single-phasing can be eliminated by use of two- and three-pole common trip breakers.

These breakers are available in the Quicklag class and NE, NF, NK and WL frames. Ratings range from 15 to 600 amp, 660 v maximum. They are listed by UL, meet NEMA specifications and federal government specification W-P-131a.

Resistor

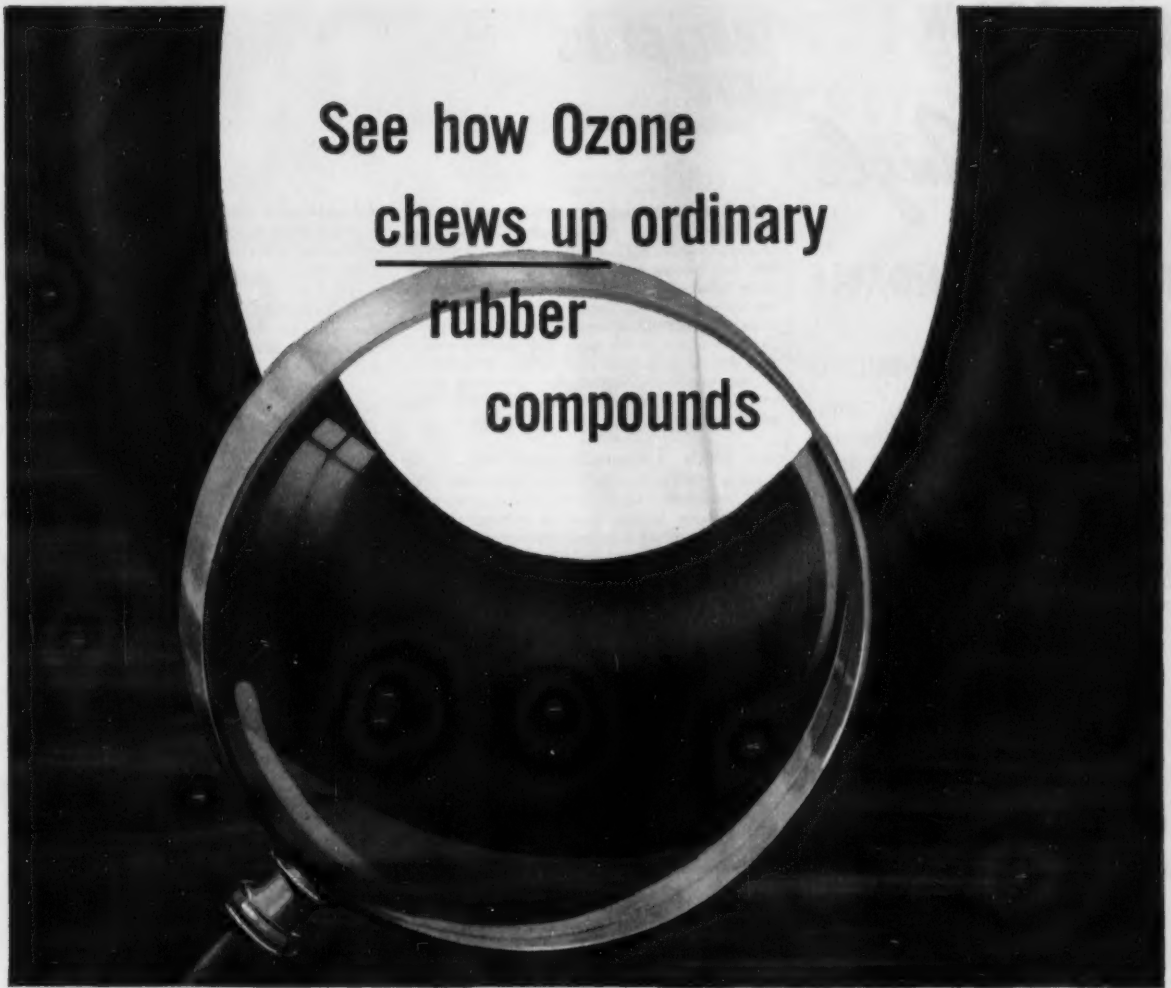
(23) I-T-E Circuit Breaker Co., Resistor Division, 19th and Hamilton St., Philadelphia 30, Pa.

A midget wire-resistor designed to meet the needs of the subminiaturizing program is hermetically sealed, built to customer's specifications and available in standard sizes down to ¼ by ¼ in. The resistors are designed to operate precisely in ambient temperatures ranging from −55 C to +125 C. They feature low temperature coefficient and high stability.

Wall Heater

(24) Markel Electric Products Inc., Buffalo 3, N. Y.

A low-cost wall Heetaire that is fully automatic has been announced by the manufacturer. This 241 TN 1,000-w automatic bathroom radiant heater turns itself off and on as needed to maintain a selected temperature between 40° and 85°.



but not U. S. Grizzly Uskorona-insulated power cables

Here's an illustration showing how ozone can chew up a sturdy, rugged cable. This can never happen with United States Rubber Company's famous Grizzly® power cables, insulated with Uskorona® compound which prevents electrical failure caused by ozone (Uskorona-1 oil base compound and Uskorona-2 butyl base compound). Uskorona meets (and in many ways exceeds) the applicable IPCEA specifications for ozone-resistant rubber insulation.

U. S. Grizzly ozone-resistant power cables are typical of the wires and cables "U. S." develops to meet the ever-increasing rate of expansion of electrical generation and construction. "U. S." is always ready with new products to meet new demands and is always developing, as a matter of policy, wires and cables that are more economical because they are more serviceable.

U.S. Grizzly Uskorona-insulated Power Cable, 15,000 volts, Type RR, 3 conductor, shielded, Neoprene jacket

Send for free illustrated book giving full information about U.S. Electrical Wires and Cables for the Electric Utility Industry.

US RUBBER

UNITED STATES RUBBER COMPANY

ELECTRICAL WIRE & CABLE DEPARTMENT, ROCKEFELLER CENTER, NEW YORK 20, N. Y.

FROM

Every Angle

THEY'RE DEPENDABLE

OHIO

MOTOR AND GENERATOR BRUSHES

Thousands of industrial concerns have availed themselves of our product and the recommendations of our engineering staff. Send your motor and generator brush problems to us and we will prove to you that when you buy "OHIO" you buy DEPENDABILITY.

ORDER YOUR CARBON BRUSHES FROM A SINGLE SOURCE

West Coast Representative
C. F. BOWERS
544 S. San Pedro St.
Los Angeles 13, Cal.

THE OHIO CARBON COMPANY

12508 BEREA ROAD • CLEVELAND 11, OHIO

BULLETINS ETC.

(25) HEAT EXCHANGER TUBES—In a 24-page two-color booklet, Alcoa aluminum heat exchanger tubes are described and illustrated. The first section covers the economics of using these tubes, their types and an explanation of the corrosion protection provided by cladding. Other sections report service and laboratory experience in use of the tubes with cooling waters and discuss successful applications. A technical section contains specifications, estimating data, etc. Copies are available from Aluminum Co. of America, 728 Alcoa Bldg., Pittsburgh 19, Pa.

(26) STEAM TURBINES—Available in reprint form is "Steam Turbine History Highlights" by R. C. Allen. The article traces the development of the steam turbine from its infancy; tells of the first practical applications and the developments. Copies are available from Allis-Chalmers Mfg. Co., 939 S. 70th St., Milwaukee, Wis. It is designated O3R8145.

(27) TENSIONING MATERIALS—A new catalog on tensioning materials for prestressed concrete has been prepared by John A. Roebling's Sons Corp., 640 S. Broad St., Trenton, N.J. It gives detailed information and charts on characteristic properties of the manufacturer's wire and strand and has descriptions and photos of construction jobs in which prestressing has been used.

(28) TRANSFORMERS—Large distribution transformers, 250-500 kva, designed for increased load densities are discussed in booklet B-6134 available from Westinghouse Electric Corp., P. O. Box 2099, Pittsburgh 30, Pa. Constructional and standardization characteristics are described and related to economic handling and operation procedures. Choices of windings, method of tap changing outside the tank and accessories also are discussed.

(29) ARRESTERS—A 28-page bulletin on station-type arresters, designated GEA-1304L, is offered by General Electric, Schenectady 5, N. Y.

(30) VOLT-AMMETER—The new Amprobe catalog No. 134 shows the complete line of snap-around volt-ammeters made by Pyramid Instrument Corp., Lynbrook, N. Y.

(31) BRACKET—A line of mounting brackets for support of cable trough, conduit instrument tubing trough and similar items is described in an eight-page bulletin offered by the Rakit Corp., 711 S. 50th St., Philadelphia, Pa.

(32) RADIANT HEATING — A booklet on its radiant ceiling heating system is offered by Sunwarm Inc., P. O. Box 263, Kingsport, Tenn.

(33) TESTER—Specifications on new model 422 Hypot high-voltage portable a-c test instrument are given in bulletin 4-1 from Associated Research Inc., 3758 W. Belmont Ave., Chicago 18, Ill. Its range is 0-10,000 v a-c with 20-ma short-circuit current.

(34) EQUIPMENT—A pictorial index of its line of controls, power transmission equipment and switchgear is offered by Nelson Electric Mfg. Co., 217-A, N. Detroit Ave., Tulsa, Okla.

KILL TWO BIRDS WITH ONE STONE—Fill out this coupon and get back valuable information from as many sources as you indicate.

ELECTRICAL WEST
68 Post St., San Francisco 4, Calif.

Not good after October 1

Please send me, without obligation, the new product information or catalogs:

If described in Product News, circle item number

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34

If described in advertising, fill in page number

☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

NAME..... TITLE.....

COMPANY.....

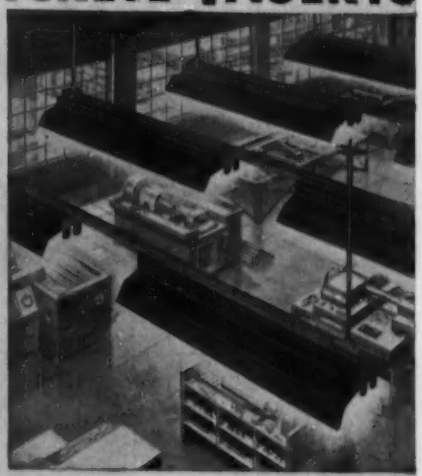
ADDRESS.....

CITY..... ZONE..... STATE.....

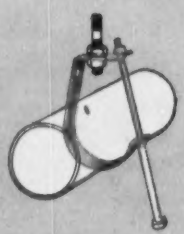
* Please include your company's name and your position, as we cannot ask manufacturers to furnish literature unless you do.

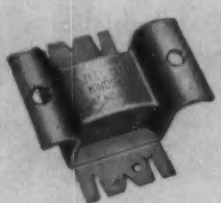
KINDORF CLAMPS, HANGERS and CONCRETE INSERTS

for Supporting
CONDUIT
LIGHTING
FIXTURES
and
ELECTRICAL
EQUIPMENT



Are Designed for Doing Better Jobs Quicker





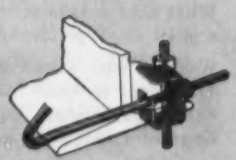
The time saving and complete KINDORF Line provides Hangers and Supports for

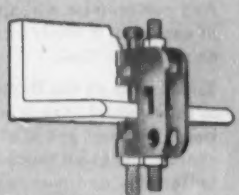
Suspending Single and Multiple Runs of Conduit

Channel and Fittings for Racks, Frames and Hanger Supports

Spot Type and Continuous Concrete Inserts

Channel and Fittings for a Safe, Economical and Practical Method of Hanging Fluorescent Fixtures



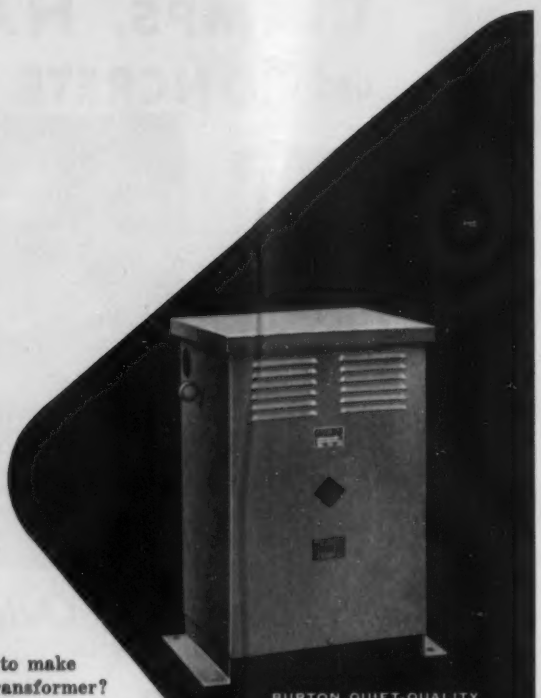


ELECTRICAL BOXES AND CONDUIT FITTINGS

STEEL CITY ELECTRIC CO.

PITTSBURGH 33, PENNSYLVANIA

KINDORF CHANNEL CLAMPS and HANGERS



BURTON QUIET-QUALITY DRY TYPE DISTRIBUTION TRANSFORMERS

SILENCE

is the symbol of their excellence!

What does it take to make a *quiet* dry-type transformer?

Working with sound measuring equipment in their own anechoic chamber, Burton Equipment Co. Engineers found the answer.

Noise can be held to a minimum by carefully assembling the best materials available. Any compromise with quality, any carelessness in assembly is likely to cause noise. The secret is as simple as that.

Technicians at the Burton Equipment Co. are trained to take special care in cutting and stacking core laminations. The best grade of iron is used, with each leg having exactly the same number of pieces. This prevents flux nonuniformity and resultant lamination rattle. Cases, mounting, hardware are designed and constructed to avoid resonance.

All Burton Quiet-Quality Transformers have a lower noise level than that required by ASA and NEMA standards. Burton XQ—Extra-Quiet-Quality Transformers are as quiet as the standard for liquid filled types. Both QQ and XQ lines are available in all standard voltages—5 through 1000 kva.

XQ, *extra-quiet-quality*, BURTON TRANSFORMERS *are guaranteed to be 10 db quieter than ASA and NEMA standards!*

Extra-Quiet-Quality models solve school and hospital power distribution problems easily, positively, inexpensively.

BURTON

BURTON EQUIPMENT CO., INC.

4810 Firestone Boulevard, Box 681, South Gate, California

Telephone: LOgan 8-3151

LETTERS TO THE EDITOR

What Price Losses?

To the Editor:

I was very much interested in your editorial in the November 1953 issue . . . entitled "Put the $ Sign on Distribution Economics"—being a letter to distribution engineers. I was particularly interested because I prepared a paper on transformer loading and regulation recently. I could not find anything in the literature as to the proper cost to assign to kilowatt-hour loss because of transformer regulation. The figures of $0.007/kwh and $0.014/kwh are used widely in the literature of our industry for the cost of transformer core loss and the cost of copper losses; but no one seems to have assigned a cost to distribution transformer regulation other than a figure of $0.04 per watt-year, which was used in an old book on transformers in 1923. (This was E. G. Reed's *Transformer Practice* published by Van Nostrand, and Reed did not change this figure in his latest revision in 1927.) $0.04 per watt-year is the same as $0.0045/kwh.

I have written to D. K. Black, manager of power transmission and distribution engineering, utility engineering section, General Electric Co., for information on the cost of distribution transformer regulation; and also to J. E. Chile, manager of the transformer engineering department of Westinghouse Electric Corp. at Sharon.

Your fine editorial no doubt has brought this subject to the fore and it occurred to me that someone may have written to you suggesting a figure which should be assigned to the cost of transformer regulation. I should appreciate hearing from you if that is the case, or I should appreciate any suggestions you might have as to any other effort to assign a figure to this cost.

J. M. Gaines
Manager, Brevard Branch
Duke Power Co.
Brevard, N. C.

Helped Get Reduction

To the Editor:

Your publication and a considerable number of other journals interested in household appliances contributed substantially to the achievement of the reduction in the federal manufacturers' excise taxes on appliances from 10% to 5%.

You kept your readers informed of the urgent need for reduction in the appliance tax and the urgent need for active support of the program. You also kept your readers well informed regarding the status of excise taxes during the legislative processing of the Excise Tax Reduction Act of 1954.

In behalf of the NEMA Excise Tax Committee I wish to express the committee's sincere appreciation for the excellent support which you have given to the success of the excise tax reduction program.

J. R. Poteat
Chairman, NEMA Excise Tax Committee
National Electrical Manufacturers Assn.
New York

GET LOWEST INSTALLED COSTS . . . EVERY TIME . . . WITH

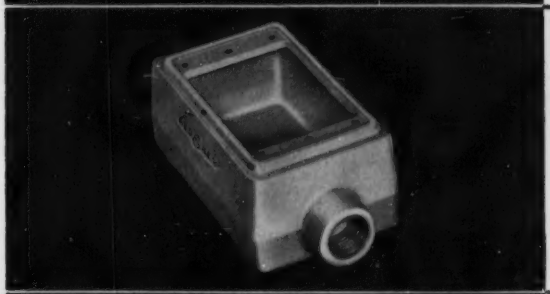
GEDNEY CONDUIT BODIES

MALLEABLE IRON—HOT DIP GALVANIZED

YOU CAN'T HELP but cut installation costs with Gedney Conduit Bodies. Every one of them is accurately machined and threaded . . . smooth finished . . . made of unbreakable malleable iron . . . inspected for complete perfection. On top of that, they're special hot dip galvanized to assure absolutely top life on the job . . . and they come in all types and sizes from ½" to 4"

AMONG GEDNEY'S COMPLETE LINE ARE:

TYPE LB—Threaded—for heavy wall rigid conduit. Used with Gedney entrance fittings, straps, clamp backs, etc., you get an *entire* conduit system with hot dip galvanized finish.



TYPE FS—Threaded—shallow bodies for heavy wall rigid conduit. Only Gedney gives you hot dip galvanized as standard finish . . . no corrosive deposits on threads to slow down work and hike costs.

NO MATTER WHAT your requirements may be, there's always the right Gedney body and fitting for the job. To cut installation time and costs and assure long-run dependability, specify Gedney, always.

GEDNEY FITTINGS FIT

GEDNEY
ELECTRIC COMPANY

GEDNEY

RKO BLDG. • RADIO CITY • NEW YORK 20
Foundry, Factory and Shipping Point: Terryville, Conn.

ELECTRA'S HUSBAND

"WHY don't you get a new globe for this lamp? The 200-w element in this one is burned out," I said to Electra one evening last month as I turned on the lights in the living room after dinner.

"That's your department," she countered tartly. "Don't you remember that you agreed to buy all light bulbs in the future because those I bought were too small? Besides the lamp I like never burns out." This last was accompanied by a dainty pull on the chain switch that lighted a glass-shaded relic that had been given us as a wedding present almost 30 years ago.

"Your eyes will burn out if you insist upon working and reading with that derelict," I remonstrated. "I know what you're going to say: 'It's pretty and I like it.' Well it doesn't fit into this light-conditioned room. And besides I never go near a store that sells light globes. So you buy three 100-200-300-w lamps the next time you go shopping. Then we will have some spares on hand."

"All right, if you insist," she agreed. "But I'm going to keep this lamp," and she pointed to her old favorite.

"You won't the next time this room is relighted," I muttered and then said more brightly, "You know I saw some brand new lighting effects in the East. They may be a year or two away, but they were certainly impressive and beautiful."

"Do you mean you're thinking about fixing this place up again?" she asked heatedly. "It's only been a little more than a year ago that you had me buy $300 worth of new lamps."

"It was three years ago," I said. "Besides this new stuff won't be ready for a couple of years. It consisted of luminous wall panels that you can purchase in sections. The controls permit various intensities as well as colors. Then too the panels can be decorated to match any color scheme. The demonstration was beautiful to behold. You would have enjoyed it. For working area lighting there were reflecting spaces toward which concealed and semiconcealed spots were directed as needed. There were no portables as we know them."

"Why don't you electrical people tell folks about these new things?" she queried. "Who sells home lighting anyway? I want the answer to pass along to Joe Morrison's sister."

"Why stores and architects and builders and lots of people sell home lighting," I answered with just a little confusion.

"Not according to Joe's sister and her husband they don't," she insisted.

"Tell me more," I said.

"Well you know Joe's brother-in-law is a civil engineer. Also he thinks that he knows a little bit about architecture. He has drawn up a set of plans for a new house. It's to be built in one of the new subdivisions outside of Sacramento. And it's not a little place either—it will cost more than $20,000 to build."

WHO'S SELLING LIGHT ANYWAY?

"But what about home lighting," I interrupted.

"Let me alone and I'll come to that," she continued. "When the plans were finished they took them down to the utility for some help with the wiring. They got it quickly and graciously —a certified wiring job they said— electric range and water heater wiring, provision for air conditioning and for automatic washer and dryer and all of the rest."

"Let's get to the lighting," I said impatiently.

"All right then," she retorted. "Their builder took them down to a wholesale house to look at lighting fixtures. They looked at actual lighting units and at pictures in catalogs and they picked out what they thought they might want. Then came the pay-off. The salesman totaled up the figures and apologized because the fixtures would cost a grand total of $103. They didn't complain. In fact they don't know today whether they have a good lighting job or a poor one. Joe's brother-in-law admits that he doesn't know the first word about home lighting. And no one showed any interest in helping them."

"They should have had a good architect do the designing," I argued.

"So what," she challenged. "Some of our friends have had architects plan their homes and I haven't seen any outstanding lighting installations. They get beautiful bathrooms and kitchens and patios but the lighting is usually just plain lousy."

"Well why didn't Joe's sister ask her decorator?" I said defensively.

"She did ask a decorator about color schemes and wall paper and the like," Electra asserted. "But nobody, and I mean nobody, proffered any information about modern home lighting. The power people didn't. The builder didn't. The lighting fixture salesman didn't. The decorator didn't. And then you tell me your industry sells all the new things and new ideas to people."

"Oh yes they do," I defended. "They are great salesmen."

"You make me sick," she bantered. "The idea for lighting this room came from a little booklet you brought home from a meeting. Then I had to search through store after store to find good-looking lamps that met the specifications in the book. Since then I've never seen any more on the subject. And my experience isn't unique. I'm convinced that not only do you people fail in your selling job, but you don't know anything about it."

Reflecting about this later I thought how lighting was the first great electrical development — seventy-five years ago; how lighting is the basic business; how it brings lots of revenue to everybody from manufacturer to utility.

But the pay-off came a couple of days later. An associate introduced me to his new son-in-law — the merchandising manager for a large builder of tract homes. During the course of our conversation the chap asked this question:

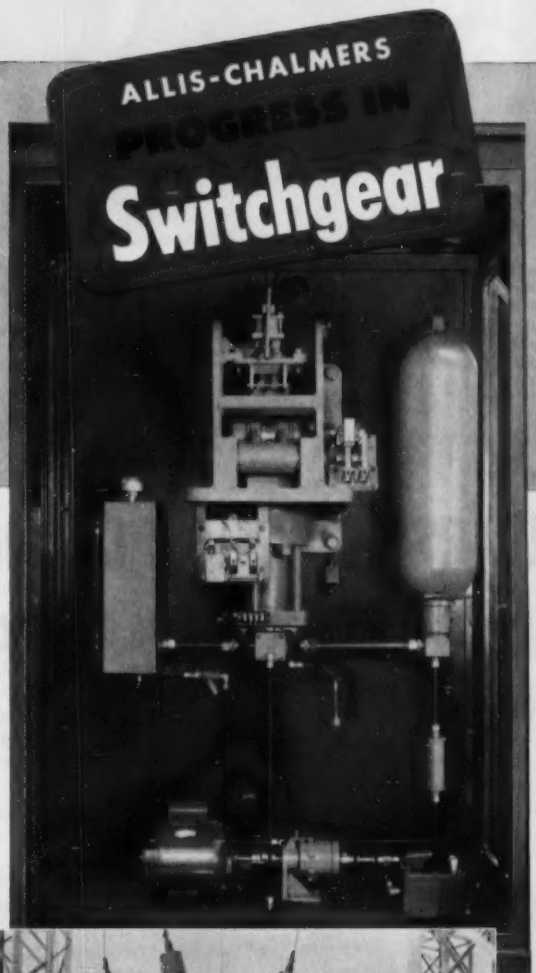
"Why is it that in all of my experience in the home-building business, no one in the electrical business ever has come forward with a single idea or suggestion about lighting the thousands of homes we've built?"

"The appliance people have sold us kitchens," he went on, "but nobody has come to us to sell us light conditioning. I hear they blame the builders for neglect of lighting but who is selling lighting anyway?"

I give up.

"Pneu-Draulic" Operating Mechanism for Breakers

Looks Simple...IS SIMPLE!



Only 1 adjustment in hydraulic system...
to position the spool valve.

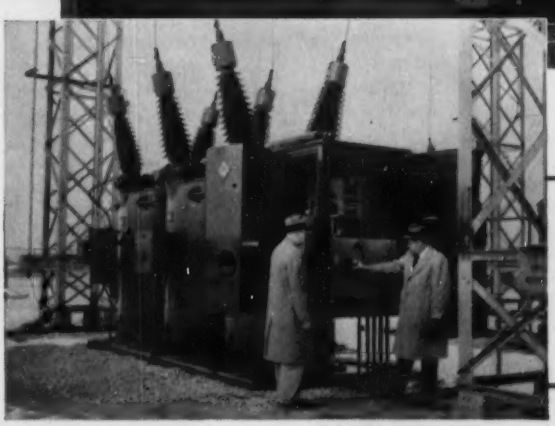
Only 2 moving parts in hydraulic control...
the spool valve and its control.

This simplicity of design was an important factor in the performance of *Pneu-Draulic* operators during the past year at an eastern power company. But this is only one part of the story of simplicity. It's simple to maintain as well.

Note the wide open accessibility — the short lengths of pipe — the few parts. In addition, the system eliminates basic causes for maintenance. Dirt hazard is eliminated. In effect, it's a sealed system with efficient filtering. Corrosion problems are reduced, since oil in the system uses one of the best corrosion inhibitors known. Moisture condensation problems are eliminated, since the system is filled with oil. Even manual closing is simpler, because provision for manual closing is built in.

Find out more about the breakers with the *Pneu-Draulic* operating mechanism. Call your nearby A-C office, or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4375

Pneu-Draulic is an Allis-Chalmers trademark.



New Operator Mechanism Has Excellent Record

Four 115-kv Allis-Chalmers circuit breakers at an eastern power company have operated almost a year with a total of over 4000 operations.

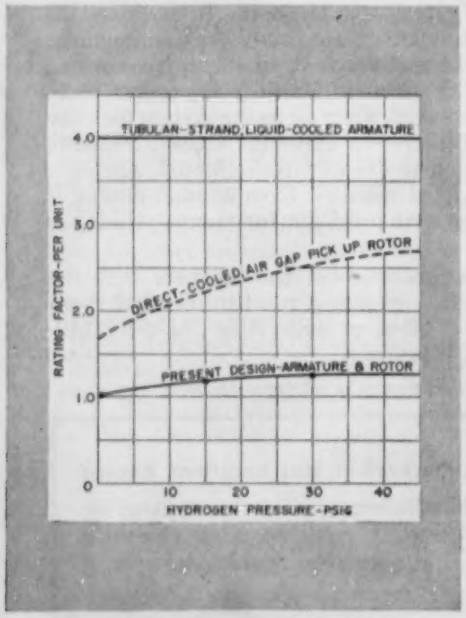
ALLIS-CHALMERS

A-C ALLIS CHALMERS

Increased capacity in same frame size with new gas and liquid direct cooling is pointed out by H. D. Taylor, Mgr.—Generator Engineering (left) in discussion with R. S. Neblett, Mgr.—Marketing and C. Schabtach, Mgr.—Engineering, all of G.E.'s Large Steam Turbine-Generator Dept. Model of Eastlake Generator (left) rated 260,000 kva occupies same foundation area as conventionally cooled machine (right) rated 160,000 kva.

New cooling advance doubles generator capacity

Eastlake Station unit points way to increased ratings through direct cooling



Higher capacity possible with new G-E direct cooling developments are illustrated in these typical rating factors (1.0 equals 100% rating) for various types of armature and field cooling. These are based on thermal limits for 3600-rpm machines.

Generators of 350,000 to 400,000 kva capacity—and even larger—have become practicable through General Electric's contributions to progress in generator design. New turbine-generators will be able to deliver up to twice present output without appreciable increase in physical size.

DIRECT COOLING ADVANCES

General Electric's combination direct cooling—using gas for the rotor and liquid for the stator—makes possible greatly advanced turbine-generators. Two units employing this new cooling technique are now under construction for delivery in 1955; one rated 260,000 kva, 3600-rpm with 8340 amperes armature current, for Cleveland Electric Illuminating Company's Eastlake Station, and a similar unit for a large eastern utility.

In addition to being the only company offering this unique cooling technique, G.E. supplies conventionally cooled units up to 224,000 kva. Thus G.E. is able to furnish a turbine-generator employing either direct or conventional cooling to best suit conditions. In this way the electric utility companies obtain generating equipment of the most economical and efficient type for every set of requirements.

NEED FOR MORE POWER

Expansion of utility loads has created the economic need for larger blocks of power. Through advances, such as G.E.'s combination direct cooling, the utility industry can now obtain these larger blocks of power with economically and conservatively designed generators.

For information about the newest and most effective cooling techniques for turbine-generators write for GER-740A, "Progress in the Design and Application of Large Steam Turbine-driven Generators" to General Electric Company, Section 301-252, Schenectady 5, N. Y.

MORE POWER TO AMERICA

GENERAL ELECTRIC

ELECTRICAL WEST
SPOKESMAN FOR THE MOST HIGHLY ELECTRIFIED SECTION OF THE U. S.

Why Are We Losing This Business?

Listing the tremendous potential business for contractors in the next 20 years, then discussing dues and membership, Don Clayton told the NECA District 6 and 8 conference at Reno, June 24, these truths about the wage and fringe situation and how it has affected the home "bread and butter" market for electrical work

Don B. Clayton Sr.
President, National Electrical Contractors Assn.
Birmingham, Ala.

It has become very evident in recent years that a lot of business is being lost to the non-NECA contractor. This is of deep concern to our membership and should be to our employees also. There are a number of causes for this and some of them are so self evident that those concerned had better study them rather carefully.

One important cause has been that, since the war build-up started around 1940, both our contractors and IBEW labor have concentrated on securing the large-volume work of the tremendous defense operations. These came all at once; the supply of contractors and workmen was insufficient; and it was almost a matter of contractors taking their choice of jobs and the workmen being able to choose between any number of jobs for their employment.

This naturally was the breeding place for high rates of pay and many types of fringe costs that, while they might have had some excuse for existing during those times, have no place in the peacetime economy, if we are to compete with other groups who were entering the picture while we had our backs turned, so to speak, chasing the rainbow of war work.

Both labor and contractors now find themselves pressed competitively by the so-called little operator who went merrily on his way during the war

At Reno NECA meeting—Nevada's Stanton, President Clayton, Vice-presidents Simpson, and Buttner, Nevada Chapter Governor Reitz

A Tremendous Market

There seems to be no doubt but that we will have plenty of work available even if the new construction we appear to be satisfied with drops. Certainly a vast amount of maintenance and modernization will be needed. Much of it will have to be sold. It is not the kind that drops into your lap.

1. Of 47,000,000 housing units at least 45,000,000 are inadequately wired. At a conservative cost of $200 each to modernize them, work from that source alone can reach $9 billion.
2. Modernization of industrial and commercial systems can mean an additional $5 billion.
3. Rural electric systems can bring $2 billion volume.
4. Schools need modernization that includes electrical work worth $3 billion.

Other types of work available to us—if we work for it are:

5. Maintenance in industrial, commercial and utility plants.
6. Industrial work for city, county, state and federal governments.
7. Line construction and substation work for utilities.
8. Highway and bridge lighting from the tremendous highway budgets.

Let's summarize by saying the utilities expect to install 250,000,000 kw in generating equipment in the next 21 years. Estimates indicate that the electrical contractor handles around $150 in construction work for each kw of capacity consumers prepare to use. That makes $37.5 billion in electrical construction besides millions for maintenance and repairs. In 1953 it was somewhat over $2.5 billion. We were very busy in 1953. The $37.5 billion would keep us very busy for the next 15 to 20 years.

taking care of the residential and commercial additions, changes and repairs, and making money and, more important, making friends. These friends can see no good reason why they should now turn away from the contractors who took care of them when we were too busy to do so, as we come back from the wars—so to speak—and want our old customers back. Unlike the soldiers who were guaranteed their jobs when they got back from the war, we have to get ours by earning them again after being practically forgotten by our old customers.

Another cause for our troubles in this respect are the many "fringes" that have been demanded and given. While these may once have appeared sound, it is hard to justify them when they bar both contractor and workmen from the work they once enjoyed and, in increasing amounts, work that we have been recently enjoying.

I have only recently heard some union business agents complaining about their contractors losing jobs by amounts less than the cost of these fringes. It is fine to have good rates of pay, and fringes too, but **the homeowner and small businessman cannot afford to have work done for them by people who charge them for one hour's work more than they can make themselves in two hours or more.** Not only can they ill afford that, but they resent it, and as a result will go out of their way, in many cases, to find someone else to do their work, or will do it themselves.

Still a third cause for our difficulties and costs, that the small non-NECA contractor does not have, are the many restrictions placed upon contractors by working rules, which tend to restrict our members in the use of apprentice and foremen ratios that our competitors do not have; and often restrict the use of labor-saving tools—the one thing that has placed this country at the head of the nations of the world in production and standards of living.

The buying public, including union members, is going to buy what it wants and needs just as cheaply as it can, just as you do when you go on a shopping tour for any of your needs. A high rate and nice travel allowances are of little real benefit when someone else has the job to which you were going to travel.

Our workmen are beginning to realize this condition, and their representatives and managers of our chapters understand the trouble. Before conditions get worse and we lose more of the work that we have been enjoying in recent past years, let's study the problem thoroughly for a solution. If the medicine is worse than the disease, then we can continue to disregard the advice of the physicians and allow the "patients"—us—to pass out of the picture.

Residential Work Gone

A problem of long standing with us is residential wiring, a large field even in new work, and a tremendous field for modernization. It seems that this class of work is shunned by both contractors and workmen, because it is in comparatively small units and is not the most convenient type to get at, especially in modernization.

It is the bread-and-butter class of work, however, and if handled right by both labor and contractor, there is no reason why it cannot be made profitable to our industry and satisfying to the owners. Unless it can be made less expensive than it is under the present agreement regulations, it will be out of reach of many small home owners who need it badly but who cannot stand the same prices that large commercials and industrials can.

In the first place, it does not require the same type of workmen as do those more complicated wiring systems and the crew setups are entirely different. It does not take four years to make a good house wireman. There are probably a good number of workmen who would like that kind of work and would be willing to continue with it on a basis that would get the type of production to bring the cost to the owner down to the point where he would like a reliable contractor to handle it rather than have some "jackleg" do it, or try to handle it himself.

The large amount that is going to be available from now on certainly makes the residential field one that we should study, and if we cannot find a way to handle it, then our system is wrong and we do not deserve it—and won't get it.

It will be another type of work, along with maintenance, that we have let slip away from us and that we don't have the ingenuity to recover. In not taking it, however, we are simply allowing it to remain as a breeding ground for the little contractor who gets his start in that field and soon appears in the field of larger work and commences taking that away from us, much to our discomfort.

If we want to represent the construction industry, we are going to have to service it and at a cost that the customers are willing and able to pay

—else others will do it, those with more ability and ingenuity.

Maybe we are getting too old in this industry and can no longer adapt ourselves to changing conditions. We would not be the first animals to disappear from the pages of history for that very reason—a lack of ability to adapt themselves to changing conditions. We might at least make the effort.

Another danger is appearing in the field of small work—or small-unit work—and that is the campaign being carried on by a large number of people servicing the householder to "Do It Yourself." It has reached a point where the investment services are recommending stocks of certain companies who supply material for the owner or tenant to use and give him detailed instructions on how to use it. We have had a considerable amount of that for some time in residential work and it is growing with every arbitrary increase in the cost of that work. It has happened in industrial work over the years to the point where a large number of companies have set up their maintenance crews in such a way that they now also handle most of the smaller jobs of new work and additions.

(Clayton went on to discuss the problem of estimating accuracy and the part NECA has had in developing labor units and training classes for estimators. Concluding remarks follow:)

All too often when the unscrupulous contractor finds himself with a low price contract he proceeds to take steps to cut all corners possible and in this manner come out of the hole. That procedure does not build up self respect nor does it increase the esteem in which our industry is held by the public. In fact it is simply an inexcusable practice.

Contractors who are not preparing accurate estimates should proceed to train their people to do so at once. There is little excuse for their failure to do so and it is certainly to their selfish interests, as well as that of the entire country, that this be done . . . It is definitely to our interest to see that all of our competitors are trained to be real businessmen and know what they are doing. The contention that the man who doesn't know his business will soon go broke, while true, is of no benefit to us, as his place will be taken by others just as ignorant.

Now as always it is true that to have a well-conducted and prosperous industry it must be composed of competent businesslike contractors. We all realize that we cannot screen them as they enter the industry, so the only answer is that we must find a way to train them after they are in . . . It is to the interest of each NECA member that our educational programs are completely developed and aggressively promoted. The responsibility for this will have to be shared by the leaders, you who take the time and have the interest to attend these and other meetings. You must have the ingenuity to find some way to get the message over to those who will not attend and so far show little interest.

Unless you do prepare yourself to take advantage of your opportunity and then proceed to do so, there is nothing that NECA can do to make you . . . You are not a qualified contractor if year in and year out you do not make a profit from your operations, regardless of how many memberships you may have in NECA or any other organization. Only you can make yourself a Qualified Contractor.

State Registrar of Contractors Ford burns paper with gimmick used fraudulently to . . .

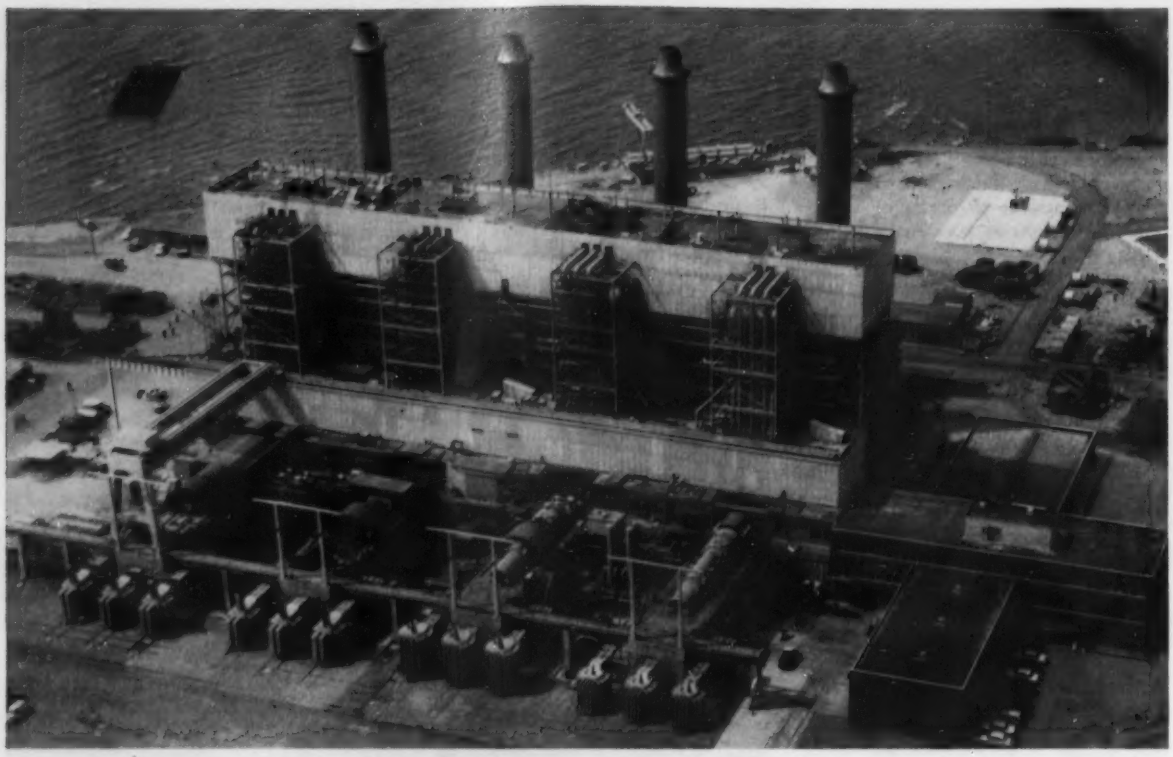
Scare People Into Rewiring

With the gimmick made up of a cord, two fuses, two bare resistance wires and a heater coil, shown above, two firms, Insured Electric and Associated Electric of Oakland, scared people into rewiring their houses. For doing so, fraudulently representing themselves as city, county or power company inspectors or engineers, and for charging their victims from two to four times what the rewiring job would have been, done by an honest electrical contractor, the California State Contractors License Board revoked their licenses, July 13.

Protests to the board were made by Northern California Chapter, NECA, by the PG and E and by city electrical inspectors, which resulted in the hearing for license revocation.

Approaches were made in several ways, either by phone or by a woman or man "salesman" who warned, as implied power or city employees, that the wiring in that house was dangerous; that a new law had been passed that would require rewiring. The property owner was offered the service of an "engineer" to advise and a high-pressure salesman carrying the gimmick would appear, plug it in, set paper afire with it and rush about unplugging all appliances in the home. The scared householder would then be signed up for a rewiring job at an inflated price. In one case, even though the woman refused, a crew was sent the next day, the house rewired and a bill for $1,100 was presented. She refused to pay. It was scaled down to $500. She refused again and called the state inspector. The price was reduced to $200.

Both NECA and Northern California Electrical Bureau felt that its TV advertising was being misused and the public victimized to react to the detriment of legitimate promotion.



Economic studies and changing practice in steam plants based on past experience by the Pacific Gas and Electric Co. result in . . .

New Design, New Layout for Pittsburg

Large plant with large units is expected to have economy of 9,550 Btu per kwh and unit cost of about $120 per kw

C. C. Whelchel

Chief, Division of Steam Engineering
Pacific Gas and Electric Co.
San Francisco

Large size was one of the fundamental principles employed for the Pittsburg steam plant of Pacific Gas and Electric Co. In initial installation the plant will have four turbine-generators with a total gross normal operating capacity of 600,000 kw.

The 156,250-kw guaranteed capability single-shaft turbine-generators are among the largest machines of their kind installed and in operation today. These inherently make it possible to arrive at lower investment cost per kw capability and also lower operating cost because increased size does not necessarily require more manpower.

Pittsburg will be the largest steam plant west of the Mississippi. Growth of the PG and E system has been such that it was economically justified to take advantage of simultaneous construction of four units at one site.

Two turbine-generator units are now going through preliminary operation and the next two units are scheduled for initial operation early in 1955. Pittsburgh steam plant is the fifth major steam plant put in operation by the company after World War II.

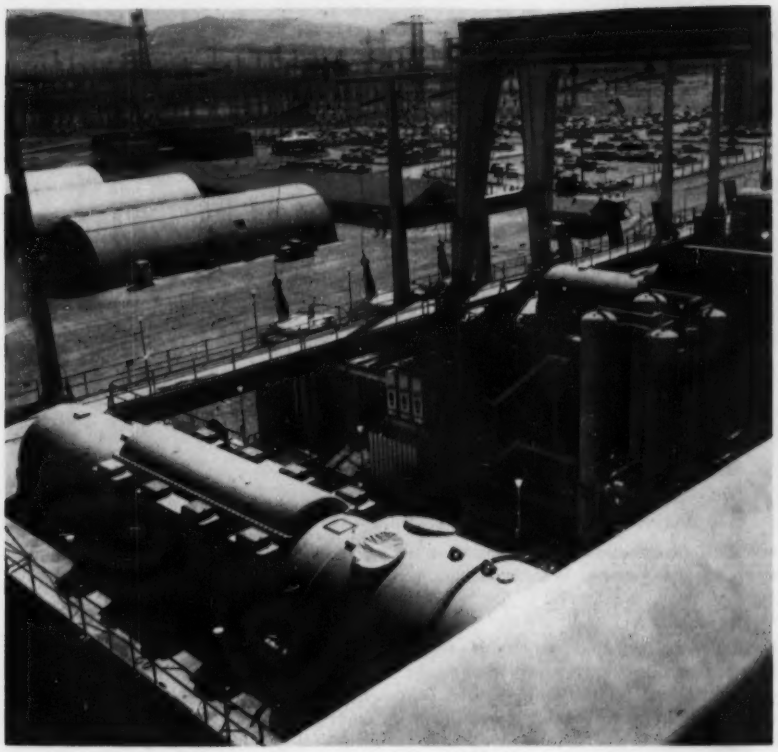
Radiant-type boilers supply steam at 1,800 psig, 1,000 F superheat, 1,000 F reheat to tandem-compound, triple-flow turbines. The plant is outdoor, with governing ends of turbines, control room and firing aisles enclosed. Primary fuel is oil with natural gas to be used when there is a surplus. Provisions are made for converting to coal burning in the future. Estimated cost is about $120 per kw of capability excluding the high-voltage switchyard. Best expected heat rate is about 9,550 Btu per kwh.

Low installation and operating costs have been foremost in mind for the layout and design of the Pittsburg plant. Six principles have made it possible to achieve these objectives:

1. Large-size units and plant.
2. Equipment has been selected for inherent reliability and simplicity of design.
3. Favorable climatic conditions made it possible to take advantage of lower costs for outdoor turbines and boilers.
4. Simplified plant design and construction economics have been applied down to the final details.
5. Good plant site and favorable cooling water supply were available.
6. Fuel economy, consistent with reliability of operation and lowest annual cost, has been recognized as one of the fundamental requirements.

Location and Site Selection

Pittsburg steam plant is situated on the southern shore of the upper part



New arrangement provides ample space between units for equipment and maintenance

of Suisun Bay in the heart of a rapidly growing industrial area. It is conveniently located immediately west of the city of Pittsburg. Transportation is excellent in that the bay carries ocean-going vessels and two major railroads run just outside of the property line. The bay also offers an unlimited supply of cooling water. The land on which the plant is located had to be raised over the natural delta area level by hydraulic fill but ground conditions around the plant building allowed the use of an inexpensive foundation with no piling. The plant site can accommodate additional units and there is ample space for future coal storage and handling.

After studies of load growth indicated that 600,000 kw of new capacity were required for the next steam construction program, the decision to install all of this capacity at Pittsburg rather than 300,000 kw at each of two separate sites was the result of economic studies of construction and operating costs and considerations of reliability of operation.

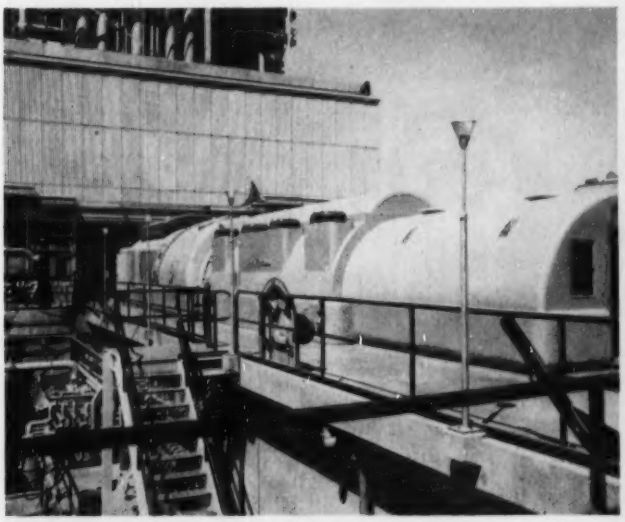
Unit size, number of units initially installed and steam conditions were advanced beyond anything built before in the PG and E system. The turbine-generators are made by General Electric and the boilers are built by Babcock & Wilcox. Steam enters the turbine throttle at 1,800 psi, 1,000 F temperature and is returned to the boiler for reheating to 1,000 F before passing through the intermediate and low-pressure stages of the turbine.

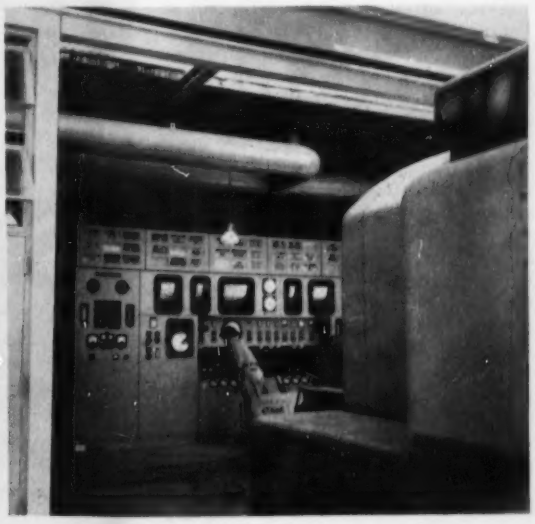
The generator has a rating of 183,-824 kva at 30 psig hydrogen pressure. Voltage at the generator terminals is 18,000 v. The radiant-type reheat boilers have a maximum continuous generating capacity of 1,134,000 lb per hour. The furnace is 46 ft wide with a total volume of 78,500 cu ft.

Plant Layout

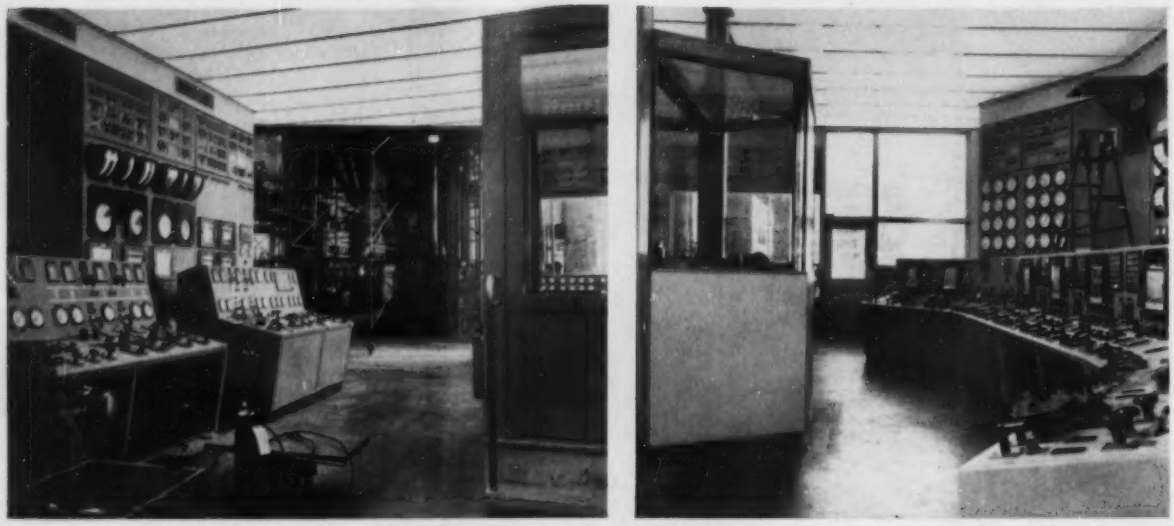
Four 3,600-rpm single-shaft turbine-generators are set side by side with axes at right angles to the length of the boiler building. This arrangement is a deviation from previous practice and results in a minimum piping distance from boiler to turbine and electrical connections from generators to transformers. Turbines are installed on pedestals that project from the firing aisle and have their head ends inside the firing aisle, as shown. This eliminates the need for weatherproofing the governor end of the turbine.

Facing the plant from the turbine





Turbine-generator units are at right angles to boiler plant, contrary to previous practice. Governor end extends into the firing aisle



Centralized control room with auxiliary controls (left foreground) from which operator has view of firing aisle in either direction. Right: Master control board in front of operator's telephone booth. Window in background overlooks governor end of the main units

side is a machine shop and a laydown area at the extreme end to the right of the turbines. Space between turbine pedestals and the outside spaces are available for condenser and other maintenance work. Single-phase transformers are placed adjacent to the generator end of the pedestals.

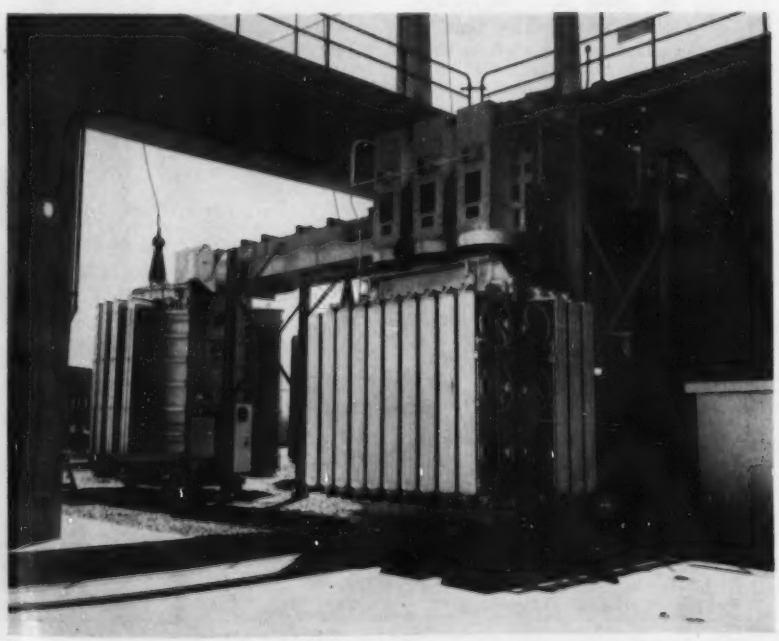
A semigantry crane travels over the laydown area, the turbine pedestals and a railroad spur loading area to the left where the plant will be expanded in the future. The control room and the firing aisle are located in the enclosed area between the turbines and the boilers. Protected areas under the boilers and turbine pedestals also provide economical space for enclosed locations of auxiliary mechanical and electrical equipment.

Crane capacity has been limited to handle the largest lifts after erection, which is a deviation from previous practice. The generator stator is the heaviest piece in the turbine-generator assembly, but it does not have to be lifted again once it has been set down on its foundation. Economic studies revealed that an appreciable saving in capital investment could be realized by using temporary rigging methods to move the stator rather than to provide full crane capacity. The 220-ton generator-stators were delivered on special railroad cars directly opposite their respective turbine-generator foundations. From the cars the stators were moved into position under a temporary hoist from where they were lifted and moved to their final position on the foundation.

Seven stages of extraction feedwater heaters are employed in a relatively conventional heat cycle for the Pittsburg plant. The two high-pressure heaters are vertical and the three lowest-pressure heaters are located in the condenser neck. The cycle also includes a deaerating heater operating at variable pressure with load, evaporator and evaporator condenser. During normal operation water make-up is expected to run from 1 to 2%.

Centralized Control

One central control room serves all four units. It is air conditioned and lighted by luminous ceiling to provide comfortable working conditions for the operators. Control boards for all major equipment are arranged in a hollow-square configuration around the operators' telephone booth. From this desk the operator faces the master control and generator control benchboards, which together with associated vertical instrument boards form one full side and parts of the two adjacent sides of the square. The opposite side is occupied by the feedwater control benchboard. Station service, excitation control and 125-v d-c control benchboards



Short generator bus feeds station service bank (foreground) and main transformer bank

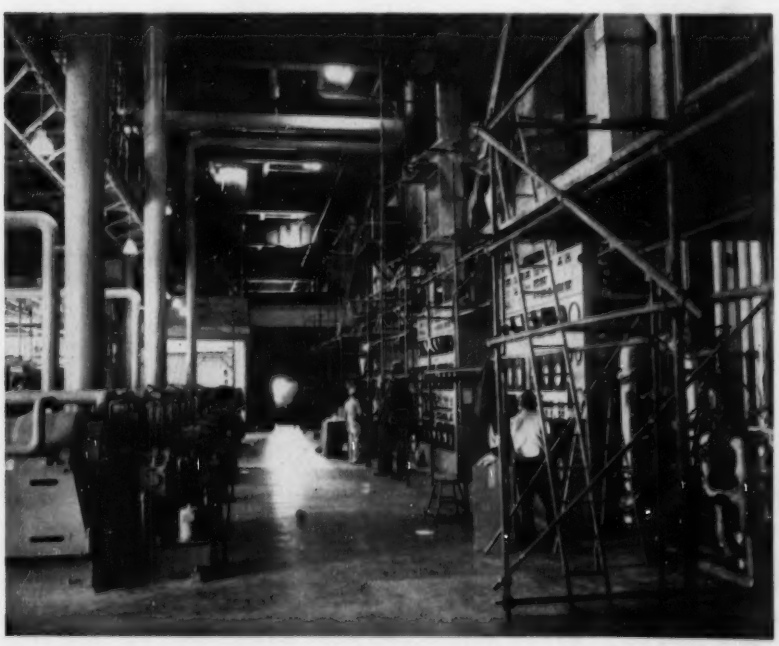
Use of tilt-up concrete slabs to form fuel oil retaining enclosures was new construction idea effecting substantial savings. Pittsburg, Western steel city, in the background

are on the two sides partly occupied by the generator boards. Two large fire doors, which are normally open, provide access to the firing aisle.

The control room is characterized by a compact and simple layout. Wherever practicable an attempt was made to locate as close together as possible devices and indicating instruments for the same associated piece of equipment. It was found advantageous to locate most of the primary controls and indicating instruments for the boilers in the firing aisle with indications relayed pneumatically to the control room. A turbine control board is located at the governing end of each turbine.

Some details in the control room arrangement are noteworthy: one is that 8¾-in. expanded-scale instruments will be used on the generator vertical instrument boards in order to improve readability of instruments which are often read from the operators' telephone booth; another point is that each annunciator indication will appear on a 6x12-in. annunciator window on the vertical generator and master instrument boards and in certain instances also on a 1x1-in. annunciator located on the switchboard containing the control of the equipment in trouble. The annunciator operation is accompanied by an audible alarm. This alarm and the large annunciator are reset simultaneously, rendering them ready for new indication. The associated small annunciator remains energized until the trouble has been cleared.

The latest advancements in steam plant control are utilized as far as economic considerations can justify. Television cameras will be mounted in the furnace walls to watch burner operation. The plant may be changed over frequently from gas fuel to oil and vice versa. Flame control is essential during these changes and the television camera offers direct vision of flame stability and combustion characteristics to tell the operator how to control the fires. Television cameras will also be used for water level indication in the boiler drums.



Firing aisle will provide unobstructed view of burner front and boiler feedwater pumps

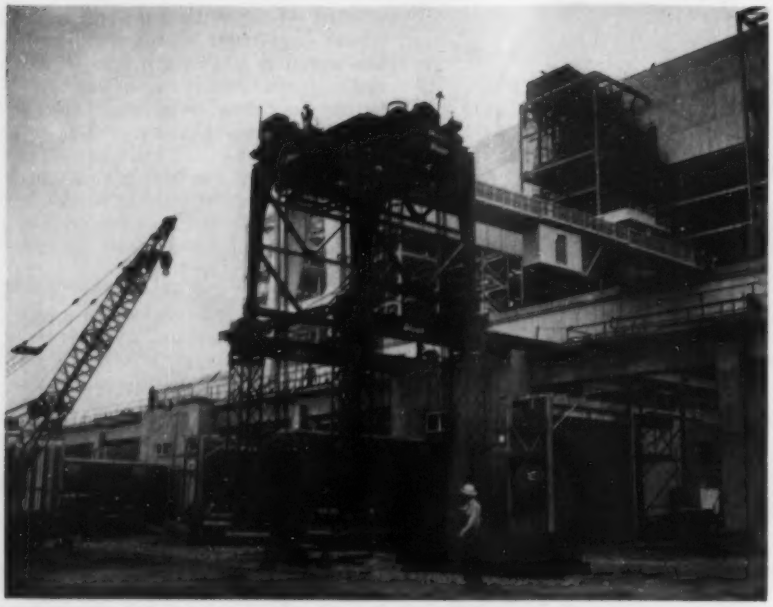
Electrical Features

One generator unit feeds into the 115-kv system and the other three into the 230-kv transmission system. Units are connected to single-phase transformers through 6,000-amp isolated phase bus runs. The switchyard will be operated independently from the main plant. It will have complete facilities similar to other large substations. There is a control building for control and relay boards, battery, telephone equipment, oil handling equipment, offices and facilities for operating personnel.

Pittsburg steam plant is connected to the system over four 110-kv transmission lines and five 220-kv circuits; provision has been made to add one more 220-kv line. Double-circuit towers are used connecting the plant to three other steam plants and three substations.

Auxiliary power for each unit is normally supplied by a house transformer connected directly to the generator leads and placed outdoor on one side of the turbine pedestals. These transformers are oil insulated, air cooled, three-phase with a rating of 10,000 kva and stepdown from 18 to 2.4 kv. Start-up power and emergency power will be supplied from the tertiary winding of the power interchange transformer bank that connects the 110-kv and 220-kv systems together in the switchyard. The tertiary winding is an inherent feature of this transformer and minor changes in the design made it available to supply station auxiliary power.

Each unit has a separate auxiliary 2.4-kv power system that will supply



Generator stator weighing 220 tons was hoisted in place with temporary gantry crane

all motors above 400 hp. This voltage was found to be more economical than the usual 4.16-kv system because short copper runs allowed by the plant layout contributed to low copper cost.

Each of the 2.4-kv station auxiliary buses will feed pumps and fans of like functions evenly distributed between two of the three bus sections. The third feeds the spare exciter or the common boiler feed pump in addition to supplying 480-v nonunitized load centers.

The main excitation system consists of geared, shaft-driven exciters and a spare of flywheel type driven by a 600-hp motor. Each generator has a static-type voltage regulator, which controls a motor-driven rotating pilot exciter. Lighting feeders are supplied through combination packaged units consisting of a dry-type transformer and voltage regulator housed in a ventilated steel cabinet.

General Features

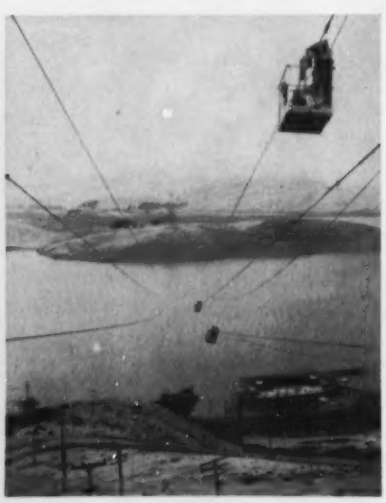
Pittsburg steam plant is initially designed to burn fuel oil or natural gas. The oil will be brought in by tankers to the oil dock from where it is pumped to six 167,000-bbl storage tanks. The dock can accommodate super tankers of 175,000 bbl capacity although the channel must be dredged deeper to allow such ships to come in fully loaded. The storage is sufficient for about 40 days' operation at full load. Because suitable material for earth dykes was not available on the site, the enclosure around the fuel oil tanks consists of concrete slabs tilted up to form a circle which was then prestressed by wire wrapping and covered with gunite.

Natural gas will be burned when available. Provision has been made to adapt the plant for coal firing if that fuel should become economical in the future. Essentially this is accomplished by larger furnace volume, proper screen and superheat tube spacing in the boilers and space for coal handling, storage, preparation and burning.

The steel stacks were built in place and lined with gunite. Nozzles have been added at the top to increase the exit gas velocity, thereby increasing the effective height of the stacks.

Circulating water intake and discharge structure are located on the shores of Suisun Bay and are separated by about 900 ft. The discharge outfall has been located at the upstream end of the property where it was determined with reasonable certainty that the warm discharge water would be carried out into the main stream and bypass the intake.

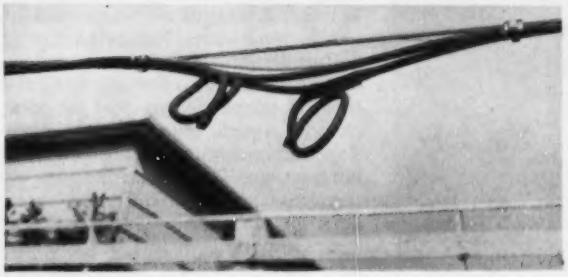
Pacific Gas and Electric Co.'s engineers carried out the studies and made the site selection, prepared the basic plant arrangement and selected the major equipment. Bechtel Corp. was retained as engineers and constructors under general direction of PG and E.



Painting their way across Carquinez Strait, Pacific Gas and Electric Co. workmen ride the steel transmission conductors along the 4,427-ft span. Three trolley cages, made of aluminum and plywood, controlled by power winch and cables, are being used as traveling platforms. Each painter has a semaphore flag and walkie-talkie for signaling. Three runs over each of six cables are made

In spinning aluminum aerial secondary cable, making service taps and installing pigtails, Pacific Power & Light finds . . .

It's Cheaper When Done on the Ground



Compression joints for service taps and pigtails (upper) are easily made on ground before cable is erected. Below: Completed pigtails

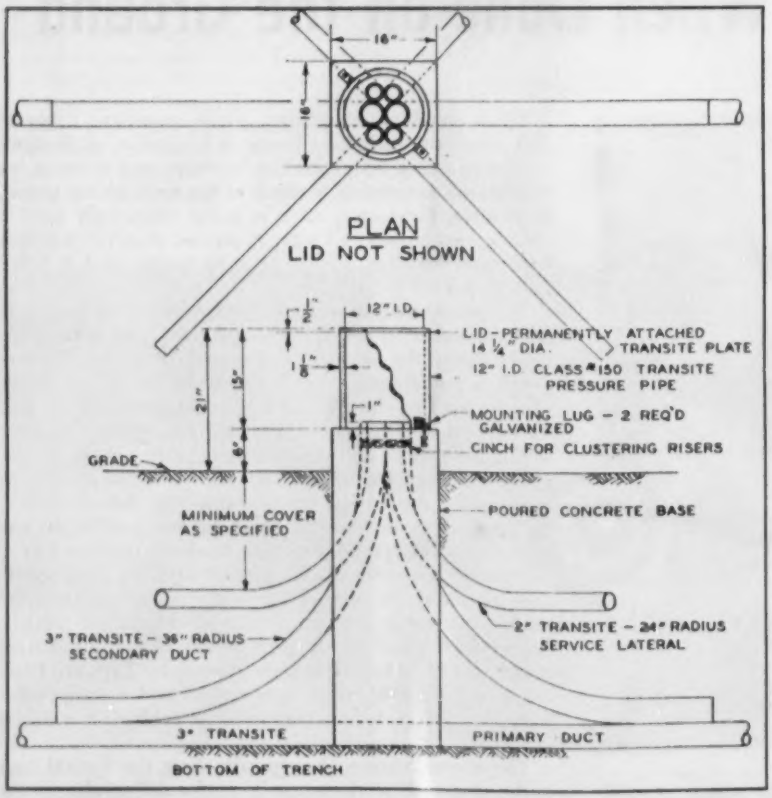
When installing aluminum aerial secondary cable on new construction, Pacific Power & Light Co. of Portland has found that a better job can be done, and at much less expense, by completing as much of the work on the ground as possible. Field-spun cable is being extensively used in serving new tracts because it makes possible midspan triplex service taps, longer span economy and a better looking job.

The procedure is to make the permanent dead-end of the steel messenger on an end pole and then, with chain hoist on the butt of the pole at the other end of the line, the messenger is pulled up so that it clears the ground at a convenient working height. The spinning machine is then started at the permanent dead-end. Little effort is required to pull the spinner on the downgrade path.

Triplex drops for houses that are ready for service are made up on the ground at the cable end. Attachment to the house is made after the cable has been pulled to tension. Otherwise, pigtail taps are made to the hot legs at every other lot corner. This permits making four service taps on one set of pigtails without encroachment except on the customer's property being served. Initial installation of the pigtails avoids the necessity of doing hot work in the air from a ladder at some later date. Taps are made by using sections of split repair sleeves and a compression too!. Final step is to pull the cable assembly as a whole to proper tension.

The accompanying photographs show the several steps in the process. If work cannot be performed on the ground then, of course, spinning must be done in the air.

New-type secondary terminal box (see drawing below) is made of capped 12-in. transite pipe set on 16 in. square concrete block



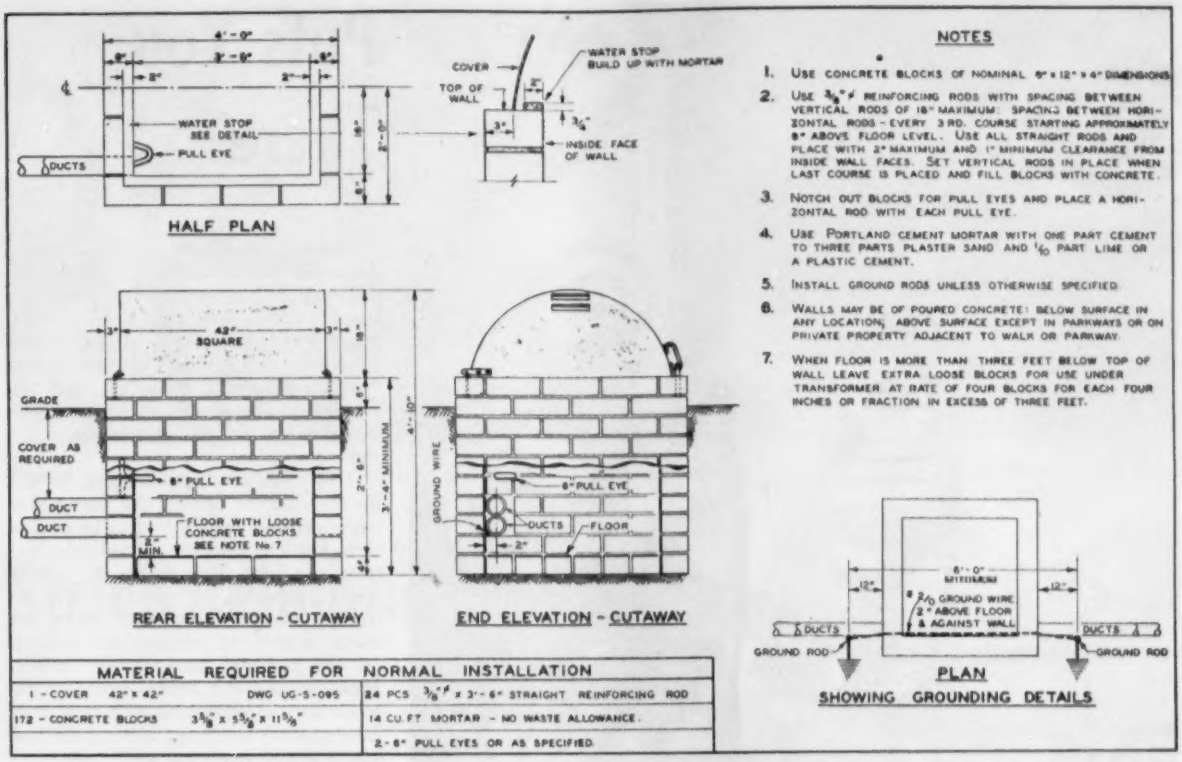
Ducts shown in typical cluster in secondary terminal box seen in the photograph above

How Tract

Brick vaults, transite duct and new type secondary terminal box are used

In an effort to reduce cost of underground serving high-class residential tracts, Southern California Edison Co. has developed a type of construction using laid-up brick vaults, transite duct and a new type of secondary terminal box. Costs have been cut to as much as one-half that of a conventional system in some cases. Estimated cost for an installation recently completed was $7 to $8 per trench-foot for both electric and telephone service. Cost of the electric system only was about five times the estimated cost for an overhead system. The power company was compensated for the difference in cost between underground and overhead.

An important feature of the new-type construction is the transformer vault. In the past the Edison company has used various types of vaults, including large concrete sewer pipe sec-


HALF PLAN
WATER STOP SEE DETAIL
PULL EYE
DUCTS
COVER
TOP OF WALL
WATER STOP BUILD UP WITH MORTAR
INSIDE FACE OF WALL
REAR ELEVATION - CUTAWAY
END ELEVATION - CUTAWAY
42" SQUARE
GRADE
COVER AS REQUIRED
DUCT
FLOOR WITH LOOSE CONCRETE BLOCKS SEE NOTE No. 7
GROUND WIRE
FLOOR
NOTES
1. USE CONCRETE BLOCKS OF NOMINAL 8" x 12" x 4" DIMENSIONS.
2. USE 3/8" ø REINFORCING RODS WITH SPACING BETWEEN VERTICAL RODS OF 16" MAXIMUM. SPACING BETWEEN HORIZONTAL RODS - EVERY 3 RD. COURSE STARTING APPROXIMATELY 8" ABOVE FLOOR LEVEL. USE ALL STRAIGHT RODS AND PLACE WITH 2" MAXIMUM AND 1" MINIMUM CLEARANCE FROM INSIDE WALL FACES. SET VERTICAL RODS IN PLACE WHEN LAST COURSE IS PLACED AND FILL BLOCKS WITH CONCRETE.
3. NOTCH OUT BLOCKS FOR PULL EYES AND PLACE A HORIZONTAL ROD WITH EACH PULL EYE.
4. USE PORTLAND CEMENT MORTAR WITH ONE PART CEMENT TO THREE PARTS PLASTER SAND AND 1/10 PART LIME OR A PLASTIC CEMENT.
5. INSTALL GROUND RODS UNLESS OTHERWISE SPECIFIED.
6. WALLS MAY BE OF POURED CONCRETE: BELOW SURFACE IN ANY LOCATION; ABOVE SURFACE EXCEPT IN PARKWAYS OR ON PRIVATE PROPERTY ADJACENT TO WALK OR PARKWAY.
7. WHEN FLOOR IS MORE THAN THREE FEET BELOW TOP OF WALL LEAVE EXTRA LOOSE BLOCKS FOR USE UNDER TRANSFORMER AT RATE OF FOUR BLOCKS FOR EACH FOUR INCHES OR FRACTION IN EXCESS OF THREE FEET.
PLAN SHOWING GROUNDING DETAILS
GROUND ROD
MATERIAL REQUIRED FOR NORMAL INSTALLATION
1 - COVER 42" x 42" DWG UG-5-095
172 - CONCRETE BLOCKS 3 5/8" x 5 5/8" x 11 5/8"
24 PCS 3/8" ø x 3'-6" STRAIGHT REINFORCING ROD
14 CU. FT MORTAR - NO WASTE ALLOWANCE.
2 - 6" PULL EYES OR AS SPECIFIED.

Plan and sectional drawings showing details of brick transformer vault. Notes give instructions for field installation of vaults

Underground Costs Were Cut Up to One-Half

tion. Experience with the various types led to the conclusion that a laid-up brick vault with loose concrete block floor would be cheapest and best. Vaults are 3x3 ft inside dimensions and 3 to 4 ft deep. They will take a maximum of a 50-kva transformer. Initial installation is usually a 15- or 25-kva transformer serving about 20 lots. Cover for the vault consists of a curved or quonset-type iron hood as shown, hinged and padlocked.

Three-inch transite duct is used for both primary and secondary cable. Primary cable, No. 6 as a rule, is single conductor, paper and lead. Secondary conductors are 2/0 or 250,000 cir mil, rubber insulated with neoprene jacket.

Secondary terminal boxes where services are taped off consist of a section of 12-in.-ID, high-pressure transite pipe placed on a concrete pad 16 in. square. Laying electric and telephone ducts in the same trench was a means of cutting over-all underground costs for the tract developer.

The accompanying drawings and photographs show details.

Laid-up brick transformer vault has loose concrete block floor and hinged quonset cover

New-type insulated extension ladder derives its motive power from a small gas engine

Single set of controls at base is used to place ladder in convenient working position

Puts You There

Another new type insulated truck-mounted extension ladder in use by Arizona Public Service Co. puts men quickly where they want to be to work most advantageously on overhead lines. Features of the ladder are its low cost, light weight, sturdiness and the type of power used to motivate it. The accompanying photographs help tell the story.

The most unusual feature is the means used for driving the pump that supplies fluid for its hydraulic operation. For this purpose a small gasoline engine is used. This makes the ladder a self-contained, self-powered unit requiring no power take-off from the truck engine. All controls are located on the pedestal base of the ladder. Mounting of the ladder unit on the truck bed, as shown, is such that very little space is taken up, leaving the bed free for wire reels and materials.

L. A. Mincks, foreman, electric service section, has the following to say concerning the new equipment:

"1. When we change secondary distribution from open wire to spun cable, we consider this equipment a must.

"2. Safety and speed. On transformer pole work we are saving approximately 50% in the time element involved, because of the fact that it is not necessary to rubber up for safe operation.

"3. This piece of equipment is ideal for alley work in congested downtown area. By placing the ladder truck on the opposite side of the alley or street and working over the traffic we avoid traffic jams and save a lot of time and trouble.

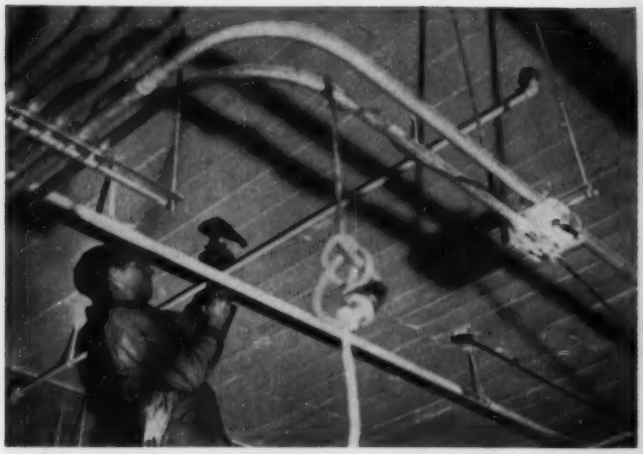
"4. We are able to cut in new wire on both primary and secondary in the middle of spans, thus saving the time in letting wires down to do the job. Interruptions to service are also eliminated.

"5. In tree work there are many cases where we use our ladder truck for effectiveness and economy.

"6. We have had some interruptions of minor detail with the motor. However, the over-all picture of this motor is good.

"7. Important, in our estimation, is the fact that with this equipment our men come in at the end of the day less tired. Their morale is high and the type of work they do reflects this fact."

The J. H. Holan Corp. of Cleveland, Ohio, is manufacturer of the ladder.



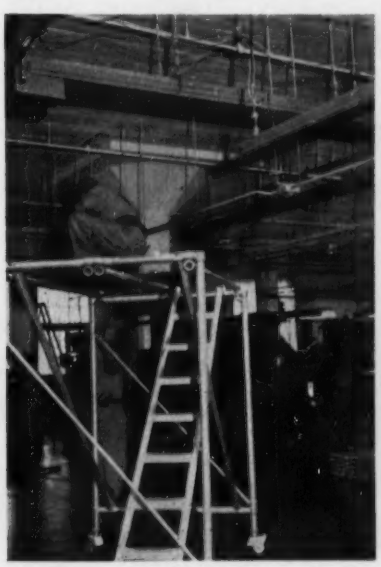
Powder gun drove studs into concrete ceiling to support hangers. Al Schultz connects bus duct breaker to feed to the trolley duct

Speed Relighting With a Gun

Importance of tools to speed installation for industrial customers is proved by cases such as that of the Phillips & Van Orden printing plant at 870 Brannon St., San Francisco, where Atlas Electric & Engineering Co. was given this task: This growing printer of telephone directories and community newspapers had acquired another floor above it in what had been warehouse space to move its composing department. The lighting fixtures were to be moved and added to, power run in for linotypes and lighting. Work was not to be interrupted and there was to be as little overtime as possible.

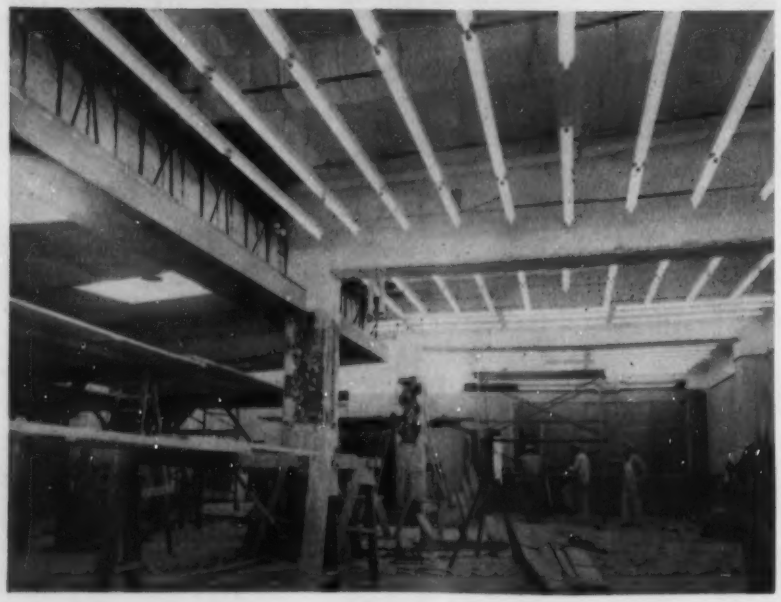
By use of portable aluminum tube scaffolds and power-activated stud driving guns and installation of bus duct for feeders and trolleyduct on which to feed and support the fluorescent industrial-type lighting fixtures, the job was done in two months with only six hours overtime for the crew plus two week ends during the plant move itself.

With Drive-it guns, using .22 and .38 caliber shells, ⅜-in. studs were shot into the reinforced concrete ceiling on 5-ft centers to support stems with turnbuckles for fastening either to the 600-amp bus duct or the trolleyduct or to Kindorf hangers for runs of conduit to feed linotype machines. Already installed pour runs of conduit were used with a fill of TW wire to supply power saws. New panels and feeders were installed and Adjustospeed electronic (eddy-current clutch) a-c press controls moved and reinstalled. On taking down the formerly chain hung fixtures the cords were stripped and equipped with new trolleyduct plugs ready for quick rehanging. New fixtures added were similarly prepared on the ground. The 22,000-sq-ft moving and modernization job was supervised by Al Schultz of Atlas.



Portable scaffold brought ceiling in reach

As soon as one section was lighted the print shop moved up to occupy and use it



Compared to the way it used to look . . .

San Diego G&E Sets New Example

As an illustration of good lighting practice and to aid in the design of similar installations, San Diego Gas & Electric Co. has relighted its Electric Building main floor office and public area as a part of a general remodeling of the building. In the original lighting, shown above, modern at the time of installation, 15 f-c was maximum on the desks from the 1,500-w totally indirect fixtures.

Now, with a Luminous Ceilings corrugated plastic ceiling 10 ft from the floor and fluorescent strips on 2-ft centers (bottom picture) about 2 ft above the plastic, the readings on desks measure 95 f-c. The entire plenum has been painted a gloss white, including the aluminum foil wrapped around the air conditioning ducts. The cavity is approximately 5 ft deep.

The luminous ceiling is over the working area. On the counter the illumination is approximately 64 f-c. The public area has about 50 f-c. It is lighted from the cove above the counter and along the opposite wall in which single-lamp fluorescent strips, overlapped at the ends, reflect light to the white 13-ft ceiling. This is augmented by 4x8-ft recessed fixtures having plastic bottoms, each with eight 4-ft lamps.

In the entrance lobby (center picture) recessed Smoot-Holman "Skylike" fixtures using 300-w silver bowl lamps are used in combination with cove lighting. In front of the elevator are 200-w recessed Holophane units combined with perimeter wall lighting troughs shielded by Guth Gratelite louver material.

C. M. Thompson was illuminating engineer for the installation. Frank L. Hope was architect and Willis L. Lipscomb, electrical engineer. The south half was completed in January, the remainder by April by the plant construction department of the company.

Pass-through refrigerators makes serving counter; four heat lamps keep servings hot at this concentrated cooking island . . .

Where Electricity Multiplies Floor Space

Kitchen and serving concentrated in the center of the restaurant speeds service. All baking, dishwashing, disposal, refrigeration equipment is at the rear of the building

A well-planned center island, packed with electrical facilities, makes an exceptionally efficient cooking and serving center in Coburn's, an attractive all-electric restaurant on Santa Barbara's State Street. Experienced with electrical facilities at his Ft. Williams, Ontario, Lorna Doone Restaurant, D. W. Coburn selected electricity for his Santa Barbara operation. He favored electricity over other types of fuel because he could concentrate so many services in so small a space. By locating the refrigeration compressors remotely, more counter space is available for serving. Beside the ranges is a glass Thermopane - door - equipped refrigerator for storage. In front of the cooks is a pass-through refrigerator for salads, cut pieces and sandwiches with three doors near the floor open to milk compartments. Beside it is a hot-food table, toaster, automatic coffeemaker, soup kettle and bun warmer. Above the serving top four infrared lamps keep the served food hot until picked up. A conveyor belt takes soiled dishes to the back.

Utah Hotel's Jerry Smith and Chef Gerard liked the electric kitchen and called for . . .

A Repeat Performance

Because it can do things like broiling 275 steaks in 17 minutes to serve banquet crowds fast, Hotel Utah in Salt Lake City, when it modernized its famous kitchen, repeated with new electrical equipment throughout. It had used electric commercial cooking equipment for years and experience taught that it was to be preferred. On an average day Chef Gerard roasts a half ton of meat, "and we save enough in meat shrinkage to pay for the ovens in a short time." Jerry Smith, building superintendent, designed the remodeling and arranged the 24x35-ft cooking area with the equipment in three rows. The first row contains the hot food tables, the middle row five sections of Hotpoint electric range tops and two large fry kettles. The third row has the steam jacketed kettles. Over each is a continuous row of incandescent lamps in vaporproof fixtures giving 40 f-c of even illumination. In addition to the range tops there are two two-section stainless-steel Hotpoint two-pan ovens. The range tops are mounted on a frame of stainless steel with a slatted shelf underneath. An asbestos-lined stainless-steel wiring trough forms a part of the top frame and extends along the cooler back. Wiring consists of a separate circuit for each unit. It is fed from a circuit-breaker panel remotely located. The tops have automatic temperature controls. Over the entire area is a ventilating hood covered with white tile for sanitation as well as good lighting. Around the perimeter is a white tile duct furnishing filtered fresh air. Inside the perimeter are three filtered ducts connected to an outside exhaust fan. Refrigeration equipment includes some 35 tons of capacity in a room kept at 10° below zero and a sharp freeze room kept at 40° below and rooms for aging, storage of dairy products, etc. E. N. Christofferson, commercial and industrial consultant for Utah Power & Light Co., acted as advisor in the remodeling program by the hotel. The Utah invites its guests to see the kitchen and considers it one of its show features.

Even and shadowless illumination for spray painting in Ontario, Ore., garage helps it . . .

To Do a Better Paint Job

• **Instead** of the two 40-w tube open fluorescent fixtures hung on the walls at his former place, Paul A. Roberts had installed in his new garage paint spray room built-in, glass-panel-covered fixtures with 40-w T-12 fluorescent and 96-in. T-12 slimline lamps in two rows along each wall and along the center ceiling. The glass panels prevent fine paint spray from settling on the lamps and reflectors. This results in a more easily maintained and a safer installation. Glass panels can be removed by wing nuts along each edge. The lighting distribution from the wall fixtures insures cross lighting. Lighting measurements at 1-ft from the floor were 100 f-c; at 2-ft 110 f-c, both taken at approximately the side of the car, horizontally. Total wattage was 3,707 kw. The room is designed to handle the largest Buick made and to provide a higher intensity of light without shadows on dark areas. J. H. Diven, Idaho Power Co., was lighting consultant, called in by a local electrician to assist in computing the lighting requirements necessary for the job.

ELECTRICAL WEST Contractors' News Letter

QUICK NEWS ON TRENDS, LAWS, CODES, MATERIALS, EQUIPMENT, COSTS, WAGES, ETC.

Fall building prospects generally look good as many plans emerge from architects' offices for bidding. But everybody is on every job and the pencils are sharp. This price pressure is transferred to the distributors and manufacturers. Maybe they are expected to make up by chiseling on materials to balance off losses from wage increases.

Good but competitive

The price-pressure situation among wholesalers has caused two groups, one in Los Angeles, another in San Francisco, to organize new associations patterned after that of wholesale plumbing suppliers, with lawyers guiding them to seek enforcement of Robinson-Patman Act price discrimination laws.

Seek the law's help

The FHA Title 1 abuses aren't doing the construction industry any good as an advertising medium. FHA itself is cleaning up the mess but in doing so making it more of a chore to get legitimate loans. It has also kicked swimming pools and other frills off the list of remodeling projects for which it will guarantee loans . . . Two electrical contractors in Oakland had their state licenses revoked for fraud and misrepresentations. Another "reformed." But by these deals the public has been frightened out of intentions to get work done. Confidence isn't built by ads alone.

Dirty linen

Without a hot spell to make window air conditioning a necessity, and hence showing up the inadequacy of present wiring, the San Francisco Bay area TV advertised rewiring campaign hasn't got off the ground. And the PG and E's talked of wiring financing plan has been so delayed that the edge of desire created by the TV spots is worn down.

No package to offer

More recruits to the Adequate Wiring promotion are spending money to tell the public. Latest is Kennecott Copper Corp. with very appealing ads in the Saturday Evening Post and This Week. Reprints of the ads and also big blowups have been distributed by utilities. Up to 500 ad reprints and 50 blowups are offered to organizations to distribute without charge.

Gets into the act

A substation in every home, predicted in this magazine over a year ago, is nearing reality. Several Northwest utilities are working on the idea with manufacturers and tract builders to serve at higher voltages for economy, then step down to consuming voltages in each house. More capacity to tap to take on every new electrical appliance and service would thus be available close at hand.

Power the house

Tail end of the wage increases wagged a raise in the San Jose area to $3.28 per hour without fringes, and travel zones instead of a straight 8c a mile. This settlement makes the San Jose rate ½c higher than San Francisco . . . By mutual agreement the wage scale for Contra Costa County was brought in line with that of Oakland and San Francisco on a two-year contract.

Overshot the mark

Always to keep the public in mind was the admonition that J. Scott Milne, IBEW president, stressed at recent union progress meetings of local officers in Billings and San Francisco. Joseph Keenan, international secretary, accompanied Milne and warned that union electrical workers were losing work to nonunion because of the fringes they have demanded and because of disputes. They spoke of the no-raid pact that AFofL recently signed with CIO. Another change recommended was that elections for local business agents every four years instead of yearly would make for more stability and responsibility and less politics in local unions. The admission of permit men to membership was also recommended.

Warned from within

Invited to talk for the contractors were Ed Buttner, NECA District 6 vice-president, and Matt Sherwood, field representative. Buttner urged more productivity to compensate for the higher wages in order to keep union-shop contractors in business making employment. The construction industry has lagged behind manufacturing in this.

Worth the pay boost

Another attempt to form a bargaining unit for the NECA line contractors in the California and Nevada area is to be made. Previous attempts to form a Line Constructors Chapter somewhat separated from the regular chapters did not succeed. Now it is planned to have a council formed of representatives from various chapters, usually the manager and a line contractor. Dues on line work would be paid to the respective chapters. Some means of financing this council is to be determined at a meeting Aug. 13 at Oakland. One such group now is formed for the Los Angeles, San Diego, Santa Barbara chapters. The northern California group would include the Nevada, Oakland, Vallejo, Contra Costa, Fresno, San Jose, Sacramento and Santa Rosa areas. The agreement with IBEW No. 1295 fell apart as the union returned the linemen to the other locals.

Line up once more

For room air conditioners of ½, ¾ and 1 hp, the Pacific Coast Electrical Assn. has sent a resolution to the Edison Electric Institute, the National Electrical Manufacturers Assn., and the Air Conditioning & Refrigeration Institute. In this it asks manufacturers to build their units with 240-v motors for ½ hp and over, which will require a special circuit. The resolution also asks for 90% pf correcting equipment. The PCEA committee represents utility, manufacturers' and distributors' people.

To the source

Chrysler Airtemp engineers come up with two air-cooled air conditioning applications for houses with radiant floor heat, a warm-air heating system without ducts suitable for cooling or furnaces with insufficient blower capacity for cool air. Self-contained air-cooled packaged air conditioners are located in the attic. The units require no water.

Added comfort

National Electrical Week and a tie-in with Light's Diamond Jubilee, the week of Oct. 18-24, should have its promotions started in September. International Association of Electrical Inspectors has issued a special manual of procedure for planning committees, outlining procedure, giving the text for press releases, proclamations, inspection reports, radio and TV spot announcements that can be used profitably. Capt. S. E. Sanislo of Seattle fire department and Leon Guibara, U. S. Rubber Co., Los Angeles, attended the planning meeting.

Big week

Asking President Eisenhower to designate annually the third week in October as National Electrical Week, Representative Pelly of Seattle introduced H. J. Res. 551, which is now in committee on the judiciary. If passed Capt. Sanislo's long-cherished ambition for an electrical week would become a national reality. Tremendous impetus this year will be given it by its tie with Light's Diamond Jubilee. Several national TV programs, advertising campaigns by utilities, local promotional programs and observances offer the industry an exceptional chance to make the public aware of the part that electricity plays in their lives.

National notice

Seattle's city electrical code revision, submitted by an electrical review board, comes up for public hearing Aug. 10. Members of the review board, selected from the Electric Club of Washington, incorporated changes in the 1953 National Electrical Code. Beverly Travis, representing consulting electrical engineers, was chairman. John Watt, representing Seattle building department, was secretary. Other members were J. D. Gawne, City Light, C. D. Casey, electrical contractors, Leon Benson, electrical wholesalers, Dave Davis, journeymen wiremen, and Norman L. Bost, electrical manufacturers.

New revision

Joe Marshall has been named manager of the Alaska Chapter, NECA. He headed the chapter since the resignation of R. W. Marsden, who now is manager of an independent association in Bakersfield, Calif.

Confirmed

Time table for the next edition of the National Electrical Code was announced by Charles L. Smith, secretary, National Electrical Code Committee, NFPA. Jan. 1, 1955, will be the final date for receipt of proposals for revisions. Code-making panels will consider them to May 1955 and report to the correlating committee. In August 1955 the reports will be published for distribution to those interested for study. From August to December study and recommended changes to the panels will be made. Jan. 30, 1956, final report by panels to the correlating committee; Feb. 16, correlating committee submits proposed changes for printing and distribution. May 1956, review by the electrical section and submittal to the American Standards Assn. September 1956, publication of the new code.

Code timing

Inspectors annual meetings will be held: Southwestern Section, Elks Bldg., Elko, Nev., Sept. 13-15; Northwestern Section, Multnomah Hotel, Portland, Sept. 23-25. In between, the 1954 regional meeting of NFPA will be held in Seattle at the Olympic Sept. 20-22. One session will be on the National Electrical Code. **Time nears**

Electrical Code Diagrams, based on the 1953 edition by B. Z. Segall in two volumes, has just been announced by McGraw-Hill Book Co. The pair sells for $25 or $13.50 for volume one and $13, volume two. Together they contain over 3,100 illustrations, 1,600 pages, 8½ x 11. They draw out the entire electrical code for easy understanding. **Explains by sight**

Sylvania will hold one of its three regional meetings at Carmel the week of August 15 for all Pacific Coast lighting sales personnel. Charles A. Burton, Lighting Division general sales manager, will bring several engineers and executives to brief the salespeople on the now complete line of lamps in every category the company makes, including mercury, high-lumen rapid-start fluorescent, and a new line of 150-w colored reflector lamps. It also has a new fixture called Sono-Lume, designed to control both sight and sound. **Sales drive meeting**

Many contractors are finding a variety of uses for a small portable arc welding kit called Royal-Arc, manufactured by Royal Equipment Corp. of 906 S. Main St., Burbank, Calif. It operates on either 110 or 220, delivering as much as 200 amp at low voltage and sells for about $180. **Tack with an arc**

Swimming pool owners can be sold by alert contractors on installing a new AquaLarm, manufactured by Modern Design Engineers, 3517 S. Avalon Blvd., Los Angeles. It sounds an alarm when anyone, such as a child, falls into the pool accidentally. **Remove hazard**

A new traveling sales show is being put on the road by Westinghouse Electric Corp. for showing to factory and office building owners and managers in a hundred cities. The shows are to be sponsored jointly by Westinghouse, its distributors and the electrical contractors of the community. Called "Chain Reaction," with blending of colored movies and slides on a panoramic screen with two-directional sound, it tells a story of electrical modernization. The mechanism to put on the show itself is so automatic it should draw considerable interest among contractors. **Modernize or drop out**

The first Western Plant Maintenance Show in Los Angeles registered almost 7,000 key personnel from industrial plants during a three-day exhibition and Clapp & Poliak have set the dates of July 12-14, 1955, for the next one. The conference, along with the show, had about 250 in attendance . . . Interesting sidelight, the EMEA of Southern California, which has its own electrical maintenance show, had a hospitality booth in this rival exhibition. NISA's Exec. Sec., Fred Wipperman, came to attend. **Will repeat**

Western Electronic Show and Convention is next, Aug. 25-27. Held in conjunction with the IRE Convention, 27 sessions will be held at the Ambassador Hotel and Institute of Aeronautical Sciences Building near the Pan Pacific Auditorium. The show itself will be at the auditorium. WCEMA has recently issued its sixth edition of its product list and membership roster, listing all products made by its 164 member firms. **See what's coming**

Two more Western companies have been bought by Easterners. Mullenbach Electric Mfg. Co. has been acquired by Electric Machinery Mfg. Co., subdivision of Worthington Corp. This gives Worthington the new Mullenbach Capaswitch, valuable in the air conditioning control. The company will continue to manufacture switchboards, etc., in Los Angeles . . . Negotiations were underway by Federal Electric to buy Gardner Transformer Co. of Emeryville. It recently acquired Pacific Electric Mfg. (It is now called Federal Pacific Electric Co.) **More merging**

Among people, this news: Charles T. Brooke is now the service engineer for Underwriters' Laboratories Inc., succeeding to the field coverage of H. G. Ufer who retired recently. He covers the whole coast and east to Idaho and Salt Lake City. He was formerly in the Chicago laboratory as test engineer and was supervising inspector in Los Angeles, a position now taken by H. J. Chateau . . . Bert Osterman, who has headed the lighting maintenance department of the T. L. Rosenberg Co., Oakland, for seven years has left and formed his own company, Bert's Lighting Maintenance Co. at 2800 Eighth Ave., Oakland. It will do no contracting of lighting installa- **Who's what**

tions . . . William Gribble has given up the Accurate Mfg. Co. line of tapes and Michael Curry has become its San Francisco representative. Gribble is concentrating his efforts on the Thermador line . . . L. F. Busse is the Northwest regional manager for Crouse-Hinds Co. and recently moved to 566 Broad St., Seattle, from 1056 Fourth St. South . . . John Watt, associate electrical engineer and plan examiner for the Seattle building department, resigned last month and Ed D'Vorak, chief electrical inspector, resigned also. John Hind has taken the post that Watt had and Tom Kohler is now chief electrical inspector. A testimonial dinner was given to Watt on his resignation . . . James Fletcher has recently been made assistant Pacific District manager of General Cable Co. instead of Seattle branch manager. The Seattle office moved from the Smith Tower to 1137 W. Hanford St. Fletcher will come to San Francisco and his place in Seattle will be filled by R. E. Roberts of San Francisco.

. . . and then some

And more: William R. Sears has recently been made Pacific Coast manager of sales promotion and publicity for Sylvania Electric Products, it was announced by Garlan Morse, Pacific Coast director of sales. He joined Sylvania in 1952 as a field salesman. A former newspaper man and graduate of Yale, he completed a fellowship at Stanford in 1951. He headquarters at 215 Market St., San Francisco . . . P. H. Butterfield has been appointed operating manager of the San Diego branch of Graybar Electric Co., S. W. Scott, Los Angeles district manager, announced. He started with Graybar in 1940, is a native of Trinidad, Colo. . . . E. L. Buttner, Oakland electrical contractor, was elected vice-chairman of the California State Contractors License Board, on which he has served as member since 1951 . . . John A. Losh was appointed develcpment engineer for Sunbeam Lighting Co., Los Angeles. He was previously with Smithcraft Lighting, is a graduate of MIT . . . A. R. Parker has left C. T. Bakeman & Associates to set up his own manufacturers' representative business, handling lighting equipment and electrical specialties, with office at 420 Market St., San Francisco. He was previously with General Electric Supply Corp. . . . Two new faculty members announced at California State Polytechnic College are: Arthur J. Robertson, electronic and radio engineering, former test engineer for Sunbeam Electrical Mfg. Co. at Evansville and later with RCA, and Jack A. Peterson, electrical engineering, former G-E test engineer and teacher at Gonzaga, Spokane . . . Norman D. Ferguson was recently elected president of California Electrical Works, San Diego. He has held several posts in the NECA.

More Scotch

Scotch tape (Minnesota Mining & Mfg. Co.) has introduced a splicing kit called "Scotchcast" for use on single conductor cables of wire sizes from 8 to 4. It makes use of its spring connector, two molded end caps and a body and a quantity of resin in a container for easy application. The resin container holds both a resin and a hardener, which when squeezed together, through chemical action, become first a liquid and then a solid . . . Another work saver announced by the same company is an electrical harness taping gun with which to wind ⅜-in. Scotch plastic electrical tape around bundles of conductors. A new display piece with "Scotty the Electrician" will be seen at wholesalers' counters to merchandise the electrical products.

Improved

Arrow-Hart & Hegeman has a new gimmick to resist impact and rough usage on its connectors for industrial cords. A "No-Trak" face of noncarbonizing and nontracking molding material is used in a rubber connector body. With this rigid material, accidental forcing of contacts into improper openings is prevented.

Handy, safe

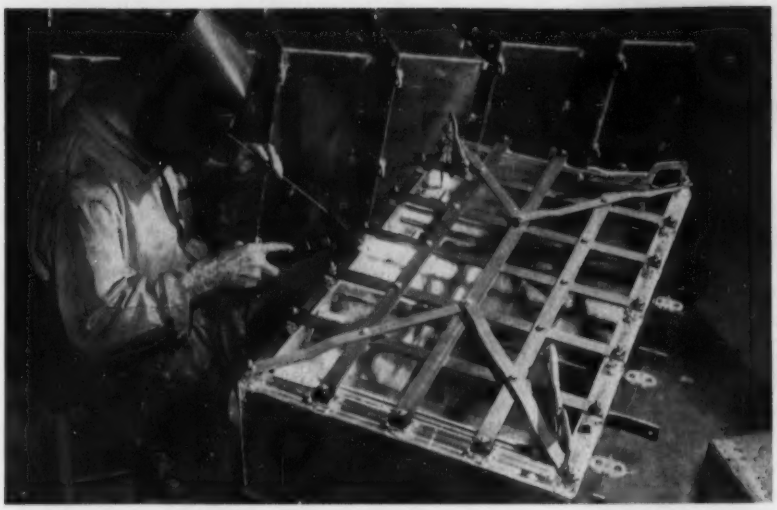
Cable Electric Products Inc. of Providence, R. I., makes a new antishock grounding adapter for three-wire electric hand tools and portable appliance plugs. With it the three-pronged grounding plugs can be connected to two-outlet devices and there is a connecting wire to bond the grounding terminal to the outlet box.

Versatile fixture

Graybar announces an entry into the luminous ceiling field with All-Brite's Area Liter made by Fluorescent Fixtures of California. With a shallow, totally enclosed luminaire in 2-ft. modules any combination of textured plastic diffusing panels can be mounted on the ceiling or built in. The plastic panels are easily removed by a hinged, supporting bracket.

Panic preventer

An emergency lighting unit, powered by a Nickel Cadmium storage battery, called "Nicad," is represented by Oliver B. Lyman Co., San Francisco. The unusually trouble-free operation and long life of these batteries is a decided advantage. The unit connects to a 120-v outlet, which trickles charges only when necessary. Lights automatically go on when power goes off.



Special jigs help reduce welding time and control distortion on aluminum alloy boxes

Exceptionally strong, clean welds, free from oxidation, are made by the Heliarc process

Arc Welding of Aluminum

Louis E. Anderson
Industrial Heating Consultant
Los Angeles Department of Water & Power

Hard-to-get parts for electrical equipment are one of the many diversified services that Ets-Hokin & Galvan of Wilmington, Calif., offers its customers. Special nonmagnetic alloys are used that have exceptional resistance to corrosion from sea water and that combine great strength with light weight. Fabrication of these units requires use of Heliarc welding equipment in which electrode, arc and fused metal are surrounded by a blanket of argon gas to protect the weld zone from atmospheric contamination.

Because of this protection from oxidation the welds are stronger, more ductile and more corrosion-resistant. In addition, the fact that no flux is required means that post-welding cleaning operations are eliminated. The necessary heat for welding is provided by a very intense arc that is struck between a virtually noncombustible tungsten electrode and the metal workpiece. The entire welding operation takes place without spatter, sparks or fumes.

The custom-made switchboards and control panels made by this firm for marine use have proved so satisfactory that orders have been received for shipment to distant cities and foreign countries as well as for installation on Navy minesweepers.

What's Required For Trailer Parks

Because trailer parks have become regular places of residence rather than merely temporary stopping places the city of Long Beach electrical department has recently revised its electrical ordinance in line with today's conditions. Chief Electrical Inspector Ben Wheater submitted copies of his ordinance to other inspectors in southern California at a recent meeting of the Southern California Chapter, IAEI, and favorable comment indicated many other nearby communities would adopt a similar set of requirements.

In brief, the new requirements require that a complete layout of proposed wiring be submitted to the inspection division and approved. The service is to be computed on a basis of 2,400 w for each trailer space plus the connected load for other accessory building and yard wiring. For determining sizes of services and feeders, a demand of 100% is specified for the first 10 trailer spaces, 80% for the next 10 and a 50% demand on all over 20. Each trailer is to have available at least one 20-amp circuit protected with an automatic circuit breaker.

A three-wire grounding-type receptacle is to be provided for each trailer space and located so that not more than four can be supplied from one location. This is to confine the cords to the space where the trailers are located. Wiring methods to serve the trailer spaces may be underground in rigid conduit or duct, structures above ground in conduit or overhead on poles with the wiring conforming to Public Utility Commission Rule GO 95.

All equipment and wiring installed outdoors is to be of a weatherproof type unless adequately housed or protected from the weather. Submeters for individual trailer circuits are to be installed on meter sockets, A-base meter fittings or shall have the meter loop wires enclosed. They are to be located not less than three feet or more than six feet from the ground level.

Electrical connections to each trailer shall be made with three-wire, grounding-type attachment plug and receptacle and a portable cord of a type approved for use when exposed to the weather. Metal frames of all exposed parts of each trailer are to be grounded through a grounding wire in a portable cord and the ground contact of the attachment plug and receptacle.

Previous rules did not provide enough capacity for modern trailers used by many for continuous living.

ELECTRICAL WEST

Preference Equals Discrimination

ANY doubts about the unpopularity of the preference clause among investor-owned utilities were cleared up during the Hoover Commission task force hearings. The group assigned to investigating resource and power development policies of the government must have been impressed by the almost universal condemnation of the discriminatory privileges the preference clause carries in the marketing of federal power. That it will recommend some change in the preference clause to provide a more equitable distribution of the benefits of low-cost, subsidized federal power between all classes of citizens is a reasonable hope and expectation. Certainly there was ample argument in favor of such change if one judges by the testimony presented.

Without attempting to designate the authority in any instance, here are just a few of the statements about the preference clause picked at random from the testimony before the task force:

"The private utility industry feels that the preference clause discrimination is unjust, indefensible and intended to socialize the industry. Federal power should be made available to the greatest number of our taxpaying citizens without discrimination." . . . "Discrimination and favoritism should have no place in the relation between government and its citizens." . . . "The availability of electricity from federal projects should be no more the subject of discrimination between citizens than the availability of highways or waterways built with federal funds." . . . "The preference clause has been used as a vehicle for promoting government power to the detriment of investor-owned systems." . . . "The principle of the so-called preference clause is evil. Certainly there is nothing more unfair or un-American than taxing the many for the benefit of the few." . . . "We submit that there is no element of fairness or justification in having the law of our land select and set apart a certain segment of our population for special privileges at the expense of the general taxpaying public." . . . "The preference clause discriminates against the vast majority of electric users and relegates them to the category of second-class citizens."

And that is only a beginning. If ever there was a federal policy that needed changing it is this one. The Hoover Commission report should point up this need to Congress in forceful language.

Back from the Wars

CONTRACTORS were likened to soldiers who went off to war and came back to find their old jobs gone, in the thoughtful talk that Don Clayton, NECA president, gave to the joint District 6 and 8 conference at Reno. In chasing after the big bonanza of war and government work, they had neglected their home town folks. When they returned they found that others had taken their customers. What was worse, with the high wages and fringes they had given to demanding workers during the scarcity of them, they found they could not compete for the home town small business at such rates.

At the progress meeting of IBEW in San Francisco last month Ed Buttner, NECA vice-president, pleaded for increased production to compensate for the higher pay the customer has to be charged. In the manufacturing industries, he pointed out, increased pay is balanced by higher productivity, sometimes, it is true, by use of more mechanization. In the construction industry labor fights the labor-saving tools that might help it make its pay raise justified. Be it said to the credit of the IBEW leadership, it spoke similar warnings about pricing the union electrician out of the market for his labor.

Yet the workshop groups at Reno who pondered the question of public interest in the wage, overtime and fringe negotiations were not ready to admit the public would "understand" and hence should not be advised. The trouble with that is that the public when not taken into consideration finds some other way to get what it wants and needs electrically. It is already doing so.

EDITORIAL VIEWS

A Streamlined BPA

IMPLEMENTATION of the Eisenhower administration's power policy inevitably called for streamlining many federal agencies engaged in electric power functions. Last month the Bonneville Power Administration received its reorganization directive. Careful reading of the survey report on BPA summarized elsewhere in this issue will reveal some significant changes that should materially improve the over-all power relationships in the Pacific Northwest.

BPA was told that its past efforts to be the big frog in the Northwest hydroelectric puddle were unreasonable and unrealistic. Instead the survey team recommended that it assume a partnership attitude and serve as a member of the team. "Improved relationship is what is desired and necessary" the report said.

In cutting down on the complex BPA organization that consisted of four divisions, 15 branches, 36 sections and 164 units or staffs, the survey pointed out that readjustments would require greater individual workloads, elimination of all unessential activities, limitation of development engineering and elimination of duplication. It directed that the total number of employees be reduced from 2,703 to 2,100.

Equally significant from an efficient operating standpoint was the recommendation that the administrator assume full responsibility for management instead of vesting this function in an executive committee. Also the report put proper emphasis on the operating and maintenance functions that are today paramount as compared to engineering and design that have heretofore dominated BPA.

The reorganization will be applauded generally throughout the Pacific Northwest. One other observation is pertinent: The survey and sharp reappraisal of BPA's responsibilities and functions points up the fact that something of this nature is essential for any mature organization that hopes to cope with the problems and concepts of today's dynamic economy.

You Can Say That Again

ENGINEERS want and should have recognition for their contributions to the welfare of mankind. They want to be recognized as a profession. How to accomplish this is the problem that confronts us. . . . . Too many think that if we only had the right organization, all our problems would be solved. They see the high professional standing of the medical doctor, and they think that the AMA is responsible for it. Nothing could be further from the truth. No profession can be better than its individual components. . . . The doctors got together in AMA and set certain standards for educational preparation, for preprofessional experience and for personal conduct. These standards are high and are in the public interest and are well known. Doctors conform to these standards, and as a result we have confidence in them and in their competence. It is not the license that is issued to the doctor that has brought this about. Licenses are issued to cut your hair, to install plumbing or to operate a bar. Neither will the licenses issued to practice engineering create an engineering profession. We must have standards of attainment and practice, must devote ourselves to the public welfare and live up to these standards. And what is still more important, these standards must become widely known and recognized. . . . Our profession is radically different from medicine and law. The direct personal aspect which is nearly universal in the medical and legal fields has only a limited counterpart in engineering. . . . I believe that a profession is made up of individuals, and I further believe that professional responsibility is as personal as your toothbrush.—Elgin G. Robertson, past-president, American Institute of Electrical Engineers.

Fine Meeting Livens A Slow Market

A simple increase of 10% in selling effectiveness could cure most of the ills of the appliance business—such as discount houses—Walter H. Johnson, vice-president, American Airlines, New York, told the 300 or so attending the radio-TV and appliance trade dinner, July 21, in the middle of an otherwise slow market, appliancewise. In the most convincing of talks in Mart history he dispelled pessimism with a simple and intensely human review of American growth and standards of living in the past 50 years. Difference between American and old-world economy, he proved, lay in the idea of making luxuries necessities in this country, "not purchasing power but purchases." He urged study of such trends as new markets created by children, colored people, old people, leisure and sports. As it has always been, he said, the future lies in the hands of those who have the ability to reach out and grasp it.

John M. McKibbin, Westinghouse vice-president and general manager of consumer products, had an equally thought-provoking message, backed by figures, charts and pictures projected on three large screens in a diorama fashion. With long electrical industry experience he based his optimistic market potentials on the growth patterns of "your partners, the electric utilities." Two major obstacles put a question mark on the possible-to-obtain 428,000,000 appliances that can be sold in the next five years. One is that every other business will be in the most competitive scramble for the consumer dollar ever known. The other is adequate wiring. Hard and creative selling can overcome the first. An all-out electrical wiring modernization campaign by utilities, distributors, appliance and TV dealers and contractors is needed for wiring.

After opening with a realistic sound reproduction of the S.P. Lark train coming right into the big auditorium, as recorded by Ampex of Redwood City, its sales manager, Jack Hauser, explained that Hi-fi really meant better tone and quality of sound reproduction. That radio and juke boxes have educated the public to want better sound was proved, he said, by sales of over $50,000,000 worth of sound equipment last year. He said that tape records of an hour of music would soon be marketed by RCA-Victor, Capitol and Decca.

LeRoy H. Bennett, manager, Northern California Electrical Bureau, ran the compact meeting with brief introductions for speed. Frank K. Runyan, general manager, Western Merchandise Mart, arranged the program.

With fewer appliance exhibitors than usual in the Mart and new product showings made earlier or yet to come, traffic on the appliance floors was light and buying had already been done. Furniture and lamp buying may have been much livelier.

Top picture — Spectacular three-screen diorama pictures and charts were used by John M. McKibbin, Westinghouse vice-president, at the appliance and TV dinner. 2. Hotpoint's new built-in oven and range units please Orv Ransom, zone manager, Rod Hall, Graybar, and Clara Sherburne, Hotpoint home economist. 3. Westinghouse enlarged offices and remodeled show space for consumer products Western headquarters. 4. "Miss San Jose" became "Miss CBS-Columbia" (Jill Gion) and greeted Dwight McCormack, Rolf Stoddard, George Brownell of All-Brands TV, Berkeley, and Tom Ryan, in the active McCormack CBS exhibit

Experts Mary Webber, Jan Reynolds, Edith Buchholtz and Grace Diem who . . .

Help the Girls See the Light

As a long-range means to re-enter with light the modern home, made a cave at night by decorator colors and $25 builder fixture allowances, education of teachers and home economists was envisioned by Marguerite Fenner last year as a necessary first step. So she arranged a home lighting workshop, which some 100 attended. A second such workshop, again in cooperation with San Francisco State College, has just been run, June 28-July 2. Some 80 more were taught about lighting so that they may go teach others and thus penetrate the gloom and ignorance on this subject.

Miss Grace Diem, assistant professor of home economics at S. F. State College, was coordinator of the workshop. As in 1953 the college offered one unit of upper division credit. Co-sponsors of the workshop were the Better Light-Better Sight Bureau of New York and the Northern California Electrical Bureau. The three major lamp companies, General Electric, Sylvania and Westinghouse, each sent a top home lighting director to be the faculty. They also sent equipment and demonstration materials to be used in the five-day course.

The three authorities were Mary Webber, G-E Lamp Division, Nela Park, Cleveland; Edith Buchholtz, Westinghouse Electric Corp. Lamp Division, Bloomfield; Jan Reynolds, Sylvania Electric Products Inc. Lamp Division, New York City. Naomi Shank of Iowa State College also participated in the final day's panel discussion on the means of extending instruction. Ed Campbell, manager, Better Light-Better Sight Bureau, New York, came West to coordinate details and offer educational material for school or teaching use.

Marguerite Fenner, director of home economics, Pacific Gas and Electric Co., who established the course last year, assisted with local publicity and arrangements, among which were that sessions were held in the PG and E Auditorium without cost. Likewise, as chairman of local arrangements for the national convention of the American Home Economics Assn. held in San Francisco the following week, she arranged that the workshop precede the AHEA convention so that some who planned to attend that could also encompass the workshop.

Among the 80 registered were 42 teachers, 10 extension agents and 18 utility representatives; 10 were retail store clerks, two home economists in business, housewives and students.

First day's sessions were devoted to light and sight analysis of the various home visual activities requiring different amounts and qualities of light. Second day covered lamps and tubes available, light and color relationships and use of portable equipment. Then came solutions of specific lighting problems and kinds of fixtures and the modernization of existing fixtures. Lighting solutions for kitchen and laundry, built-in fixtures, special architectural effects, planned interiors came next. The last day covered exterior lighting for outdoor living and safety, a panel discussion on extending home lighting instruction beyond the classroom and of materials available for teaching.

Tucson Gets Hot

Selling and promotional news comes frequently out of Tucson, Ariz., these days. For decades it was a quiet little college town but war changed that by bringing camps and industries that have increased the population and spread the town in all directions. It now has an electric league and the Tucson Gas, Electric Light & Power Co. is aiding the industry to promote, not only by support of the association, but it has a home economist and a lighting consultant on its staff to give assistance.

Tucson Appliance Merchandisers Assn., modeled on the Phoenix AMA, has the city's most dynamic merchandiser of appliances, Bruce Hannah of Grabe Appliance Co., as president. Clayton Niles, Niles Radio & TV Center, is vice-president. Barney Barnaby, Electric Equipment Co. of Arizona, a distributor, is secretary and Glenn Thompson, vice-president of Valley National Bank, is treasurer. An additional six directors representing all branches of the industry make up the board. Ray G. Cox, is manager.

Earlier this year TAMA had 55 members of which 32 were dealers, nine distributors, others represent the banks, power company, appliance service companies, electrical contractors and advertising agencies. A catchy symbol or seal has been adopted and is used by members in their advertising, on store cards and in TV spots. Recently TAMA promoted a special appliance section of 12 pages in the Tucson *Daily Citizen*.

A. R. Seaman, commercial manager, Tucson Gas, Electric Light & Power Co., recently added Mrs. Lee Hancock, home economist, and Dale Ruble, lighting consultant, to the staff. Mrs. Hancock assists dealers train sales personnel, holds cooking schools and the like. Ruble has done much to promote light conditioning in homes and stores and offices.

Mrs. Julia Kiene, manager, Westinghouse Home Economics Institute, Mansfield, Helen Randol, San Francisco home service representative, and Helen Kirtland, director, Hotpoint Institute, Chicago, were among industry women staffing exhibits when . . .

AHEA Swarmed Over San Francisco

New products and techniques were demonstrated to some 3,100 home economists from all sections of the United States and from Hawaii during the 45th annual meeting and exhibit of the American Home Economics Assn. in San Francisco, July 6-9. The Home Economists in Business held a preconvention meeting beginning July 2.

Chairman of local arrangements was Marguerite Fenner, director of home economics, Pacific Gas and Electric Co., San Francisco.

Talks were geared to the theme of the convention, "Today's Challenge to the Home Economist." Western living was emphasized a number of times and Hawaii was well represented in decorations and entertainment. The Hawaiian Home Economists Assn. at its own biennial convention last May had prepared for the meeting in San Francisco and for a Post National Convention in Hawaii for visiting mainland home economists.

Prominent among the exhibits that surrounded the meeting hall in the civic auditorium and extended into a tent pitched adjacent, were those of electrical manufacturers, many of whom sent home economists from headquarters to take part in the program.

Since the public was not admitted to the exhibit, the women who visited the booths, asked questions and went away laden with shopping bags of samples and gifts were experts in the field—teachers and representatives of utilities, manufacturers and service organizations. The displays, which were outstanding, were one of the main attractions in a convention packed with information and entertainment.

General sessions covered most phases of homemaking; included talks on such subjects as consumer research and advantages of cooperation between education and industry.

Speaking before a session of the Home Economists in Business, Marguerite Fenner put up to her audience the challenge and opportunity facing them today—effective selling. Telling of some of the wonders to come in the home of tomorrow, she sketched the economic situation of today — abundance and variety of consumer goods; numerous needs and desires on the part of the consuming public; and money to buy. There is just one thing lacking, she said, and that is *effective selling.*

To meet the challenge thus presented, she suggested that economists take a fresh look at the work being done in the light of the present-day situation. To increase their effectiveness she suggested four steps: (1) learn the business we are in; (2) learn to know our customers; (3) discover the best ways to reach the customers we want to sell; (4) analyze our activities and develop new selling techniques.

Electrical Exhibitors

Electrical manufacturers exhibiting, and home economists in charge, included: Admiral Corp., Mrs. Vivian Overand; Casco Products Corp.; Crosley and Bendix Appliance Division, Margaret DeAtley, Ann Olson, Margaret Aubrey; Deepfreeze Appliance Division, Lysle F. Hutton; Dormeyer Corp., Mrs. Madeline Bacher; Easy Washing Machine Co., Rose Mary Guerra; Frigidaire Division, Verna Miller; General Electric Co., Lura Jim Alkire, Virginia Garvey; Hamilton Beach; Hamilton Mfg. Co.; Hobart Mfg. Co.; the Hoover Co., Margaret B. Doughty; Hotpoint, Helen Kirtland; International Harvester Co., Mae Houston; Ironrite, Mrs. Florence Scott; Lewyt Corp., Mrs. Madge Ferredy; Manitowoc Equipment Works; Nesco, Mrs. Helen Silverthorne; Norge Division, Jessy Cartwright; John Oster Mfg. Co., Janet E. Bonnell; Philco, Mrs. Adelaide Fellows; Sunbeam; Thermador, Mrs. Jeanne C. Riggs; Ultimo Mfg. Corp.; U. S. Rubber Co.; West Bend Aluminum Co., Catherine M. Jackson; Westinghouse, Mrs. Julia Kiene; Whirlpool Corp.; National Presto Industries, Mrs. Dorothy Z. Bergman; RCA Estate Appliance Corp., Celia Bush; Youngstown Kitchens, Kay Middleton.

ELECTRICAL WEST Sales Guide

News Letter

August 1954 ©

FOR THE ELECTRICAL MERCHANT OF THE WEST

Color TV, dormant this summer, appears likely to blossom this fall when both Columbia and NBC networks will begin programs every week. Aug. 22 is the date of the first fall CBS show. NBC will start a series of big 1½-hour spectaculars, one each week. Its color studios are about ready and more and more programs will be colorcast. It estimates from 12 to 15 hours a week in color this fall.

Late bloomer

The 14-in. color set is already obsolete. CBS-Columbia, with several followers, had no sooner announced 19-in. sets would be on the market this fall than RCA and its group leapfrogged to 21-in. So it will be a battle of tube sizes from the starting gun. And prices are coming down from that $1,000 mark. Emerson, discontinuing its leasing plan, says it will have a 21-in. color set. Meanwhile, it sells its 15-in. set at a new low of $695.

Aim for 21-in.

Speaking to the National Electronic Distributors Assn. in Seattle, July 24, John T. Thompson, G-E tube department, predicted a $300 million market for tubes and parts in West Coast states alone in 10 years. Of the 5,000 or so color sets so far made, he said, only 200 have been sold. By 1957 he predicted 7½ million; by 1964 37½ million. In Seattle trading area this would mean in 1964 a $28 million volume of electronic parts replacement sales; color tube replacements alone will represent $6 million in Seattle. Measure those figures against your own.

Just to keep up

Cheer up! Business Week reports, from a research by U of Michigan, that consumers are spending again, have more confidence. Even in the West many dealers admit things are picking up. So with some extra push after the vacation period, and with the huge publicity swell that will be coming with Light's Diamond Jubilee and National Electric Week in October, anybody who doesn't cash in on it just isn't in business.

Back in the stores

September has some important dates for dealers. NARDA will have a series of Western meetings, beginning in San Francisco Sept. 17, Portland Sept. 21, Seattle Sept. 20, Billings Sept. 22. . . Rocky Mountain Electric League holds its annual convention at Estes Park Sept. 13-15. . . And San Diego Bureau of Home Appliances has its high-velocity fall conference the evening of Sept. 15.

Next on program

Will table appliances replace the range? The automatic frying pan has raised the question again. Several more now have entries--Dominion has what it calls a Fry Skillet. Nesco has both a Fryryte pan and an automatic Cookryte sauce pan. Superstar combines in a Grill-N-Waffler.

Out of the frying pan--

Two of Fresno's discount Arabs folded their tents but were not silent in stealing away. Television Mart screamed in red ink, "We Quit," and Rex Television City advertised a liquidation sale in stud-horse type. . . Meanwhile, the fair trade battle nationally was hot. G-E, Sunbeam, Toastmaster and Westinghouse are still fighting the costly Korea. G-E filed two more suits in Los Angeles and one in San Francisco, within the last month.

Not for the love of Allah

Roy Hurd of the Broadway-Hale department stores, San Francisco and Los Angeles, has received support for his idea of dealer groups acquiring private brands to sell in competition with those going through discount houses. Says he even has a manufacturer lined up.

Control brand

The Trade-In Guides, published by Nelda Publications Inc., for TV, refrigerators and other appliances are on the market. Several dealer associations are making them available to numbers under a group rate. . . A comprehensive catalog on washing machine installation and replacement parts is available from P & G Supply Co, Inc., 1455 Boston Road, Bronx 60, N. Y., manufacturer of washing machine hose and component parts. Originally planned for 1955, many new installation methods and adapters available make it valuable immediately.

Service guides

Entering the lighting season, it is surprising that the traffic and buying at the Los Angeles Lamp and Picture Show were so light that exhibitors are talking about changing location and time next year.

Light buying

Promotions of the American Home Lighting Institute will be stepped up this fall to sell installed lighting fixtures. . . Light's Diamond Jubilee will serve as a focal point for promotions of home lighting throughout the West by utilities. . . The lamp companies have available attractive literature--bill stuffers, booklets on home and garden lighting.

Promotions ahead

Lightolier Inc., in celebrating its 50th anniversary, stepped up its program for its distributors and dealers as well. This includes a large number of new designs added, from crystal to modern, outdoor lighting fixtures, mobiles; an intensive advertising and display program; and establishment of showrooms. Latest showroom is that in the Central Electric Supply Co. at 500 Guivas St., Denver, at which Henry Stollnitz, Lightolier merchandise manager, conducted conferences.

Meet the trends

Room air conditioning certainly was boosted by the extremely hot weather last month. A few highlights of recent developments: FHA revised its ME-12 bulletin, which makes air conditioning units eligible for mortgages if permanently installed part of the structure. This rules out window-type units. . . Water shortages are causing a problem in many areas. In Arizona water rates were dropped for homes equipped with mechanical air conditioning, instead of using water-cooled evaporators. . . New entrant to the window air conditioning field is Sunbeam Corp. . . In Denver the National Electrical Women's Round Table meeting discussed some of the customers' complaints reaching them as sales service representatives over poorly sold appliances.

Hot and heavy

The campaign of Rocky Mountain Electrical League, distributors and Denver Post on air conditioning aims to create interest in a normally cool climate. An essay contest with units for prizes makes 'em think.

Teach

Santa Cruz County Fair is to have an appliance exhibit staged by the Santa Cruz-Watsonville Gas & Electric Appliance Assn. . . Yuba-Sutter Gas & Electric Appliance Assn. conducted a fair exhibit from July 28 to Aug. 1, Northern California Electrical Bureau and PG and E participated.

Shows

More shows

Instead of an electrical show, Los Angeles is to have a Kitchen Karnival at Pan Pacific Auditorium Nov. 26 to Dec. 5, to feature all types of kitchen equipment--electrical, gas, accessories, cooking utensils, food and food products, and barbecue and outdoor equipment. . . And the Gilson Electric Supply Co. plans to hold its second annual appliance show for its dealers in its warehouse open house Sept. 16-18.

Another drive

Goals of 1,850 freezers, 2,650 refrigerators, 2,315 ranges, 1,580 water heaters are set for the Freez 'n Save promotion of Inland Empire Electrical League and Washington Water Power in the Spokane area. It ends Sept. 30. The company's home economists will appear in dealers stores, on TV, and the advertising of the utility and dealers will concentrate on this campaign. The "Lucky Lady" campaign, ending June 30, sold 4,789 ranges, water heaters, dishwashers and garbage disposers in three months. This made a 26% increase in dishwasher sales over 1953. Eight dishwashers were given away to those guessing the weather temperature. A total of 3,200 entered the contest.

Traffic stimulator

Northern California Electrical Bureau and the PG and E are readying a huge appliance promotion in conjunction with Light's Diamond Jubilee and Electrical Week. Forty brands of major appliances will participate to give 40 prizes. Prizes will be drawn from names submitted to dealers on coupons distributed as bill stuffers. Top prize includes the major and important housewares appliances for a complete electric kitchen. Other winners will get the appliance of their choice.

Prospects revealed

Not only did 5,148 entries in Sacramento Valley Electric League's "I Want an Electric Range" contest say why they want a range but in an appliance survey they indicated 32% want dryers, 24% dishwashers, 19% automatic washers, 28% air conditioners, 27% TV sets. These prospects will be distributed to dealers.

Whirl of activity

Both San Diego and Phoenix are endeavoring to educate the public as to TV service and to protect it at the same time. San Diego Bureau of Home Appliances, with the BBB, has TV station cooperation with weekly panel talks to inform the public. . . In Phoenix both the Arizona Republic and Phoenix Gazette, in cooperation with the BBB, have issued standards for advertising they will accept. . . Phoenix AMA is also planning a fall TV festival. . . San Diego's fall program is like a 3-ring circus. It begins with a big conference Sept. 15, an annual show Nov. 26 to Dec. 1, Light's Diamond Jubilee "Sellebration" Oct. 18-30; then there are regional meetings in the outside towns, a major appliance selling course, and regular advertising schedules.

Back again

Norge distribution in northern California returned to the Leo J. Meyberg Co. in a move as surprising as it may be significant. Since Judd Sayre came to Norge from Bendix, Norge has been signing up 100 dealers a day, he said. Meyberg had to give up Norge when Bendix took on the full line, then lost Bendix to Crosley. Thompson-Holmes has been handling Norge in the interim.

Try out

Another significant test of distribution is being made by Hotpoint in a new "direct to dealer" selling program in Toledo where distribution was formerly handled by G-E Supply. The Hotpoint Co. will take on many of the functions formerly performed by the distributor. It is declared to be a pilot run to test dealer action and reaction.

Mergers

Two more mergers reported. Landers, Frary & Clark has bought the Dazey Corp. of St. Louis, makers of can openers and housewares. . . Dormeyer has bought out the manufacturer of Camfield appliances.

Shifting lines

More distribution changes: CBS-Columbia has named Columbia Distributing Co. Inc. of Seattle, Edwards Inc. of Salt Lake City and Ry-Bar Distributing Co., Portland. It had previously appointed McCormack & Co., San Francisco. . . Raytheon has appointed Joe Lapkin Co., 35 Polk St., San Francisco, for the northern California area. . . George W. Clausen of Long Beach, western district manager, Manitowoc, announces appointment of McCormack & Co., San Francisco, Quality Distributors Inc., Los Angeles, Frank Harmonson & Co., Phoenix. . . R. D. Schwalb Co., San Francisco, now handles the Republic Steel Kitchens franchise. L. B. Stull, representative, conducted a sales school for the line.

People make news

Henry C. Rice, director of sales for Southern California Edison Co., retired Aug. 1 after 37 years. It will hardly seem like the Edison company anymore. . . Leslie M. Alexander was appointed manager of development and sales for the Salt River Project, Phoenix. He was formerly with the Bureau of Reclamation in Denver. F. R. Lupton is now supervisor of marketing and sales, also from B of R. . . Martin B. Sauer moved to San Francisco from Los Angeles, to become consumer products sales manager for the Pacific Region of Westinghouse Electric Supply Co. He had been southern California district manager. Walter H. Robbins has been made Pacific regional service manager for the supply company. . . E. Lloyd Sutton is now regional sales manager of northern California and northwestern U. S. for Peerless Electric Inc., makers of Broil-Quik cooking appliances. Most recently he was with Universal Major Electric Appliance Co. . . Donald R. Dady, Hawaii resident since 1938, has been appointed general sales manager of Radio Television Corp., RCA-Victor distributor in the Hawaiian Islands.

So do these

More about people: The Hoover Co. has appointed Jack B. West as branch manager in Seattle. He started with Hoover in 1928 as a serviceman in Portland and worked in various Western cities. He was branch manager in San Francisco in 1952. John V. Redford is now San Francisco branch manager. . . Pacific Wholesale Co., San Francisco, has been appointed by the Paul Rice Co., Orlëy Corp. representative, as northern California distributor. . . Stanley R. Mathison, formerly West Coast sales manager for Mullins Corp. and later with Murray Corp., was appointed regional sales manager of Coolerator. . . Oscar J. Hammons is now Packard-Bell distributor for San Francisco territory south of Market Street, succeeding John Amberg who went to Seattle with Admiral. . . Newest Amana distributor in Denver is Western Appliance Corp. . . Trav-Ler Radio Corp. has named Sidney S. Adler of Denver as representative for the mountain states.

. . and these

George A. Jollie has been made West Coast district sales representative for the new Cathode-ray Tube Division depot in Los Angeles of Allen B. Du Mont Laboratories Inc. . . E. F. Jackson, Ben Hur's Western regional sales manager, has been promoted to company sales manager. . . The Naxon line of portable washers and table appliances is now represented in San Francisco by Paul Priesch, in the Western Merchandise Mart. Priesch also handles InfraGlas Heaters of Detroit and Atlas TV tables. . . James Kidd, former regional service manager for the midwest division of Landers, Frary & Clark, has been made manager of the Los Angeles branch of California Electric Service Inc. He succeeds Ned Donell. . . Rolf Stoddard, formerly with California Electric Supply Co., San Francisco, and previous to that with Crosley, joined the McCormack & Co. as field sales manager.

Moved

Servel Inc. has brought its scattered facilities to a new location at 5545 E. Slauson Blvd., Los Angeles. It also announced it is making major-size electric compressor equipment air conditioning units.

Irma Boyen had the contractor conceal the laundry plumbing and build in the range units and push buttons when building—

According to Her Own Hawaiian Recipe

There's no place like home for trying out the ideas a home economist develops from her experiences in helping others with their homes and appliances. As home service director for Hawaiian Electric Co. in Honolulu Mrs. Irma Meeks Boyen has had ample opportunity to see numerous modern electric homes built on Oahu. Into these have gone all kinds of equipment and the employment of numerous ideas.

When it came to the design for the home which she and her husband built last year in the hill section of Honolulu, Mrs. Boyen had an opportunity to design into it several ideas well worth imitating. Three of them are pictured here.

To conceal the plumbing necessary at the back of automatic laundry equipment is desirable. Yet few architects ever think of it. As a result the washer and dryer stand out from the wall, leaving a space for the pipes and hoses and electrical cords or connections—and dirt. Mrs. Boyen persuaded her architect, Alfred Preis, AIA, who now makes it standard, to extend a ledge from the wall to the Laundromat and dryer that gives the twin units a really built-in look. The ledge serves as a shelf and the appearance is neat. Shutoff valves to the washer were concealed in the lower cabinet next to the pair.

A divided and built-in range was wanted without spoiling the unbroken sheet of stainless steel counter top between kitchen and breakfast room. So Hotpoint Calrod surface units and well cooker were set in this top. The push-button switch controls were mounted in the cabinet face as shown above. The oven, one of Hotpoint's first new built-in ones, is in the opposite wall mounted at waist height.

Another practical idea is found in the lighting of Mrs. Boyen's built-in vanity section of cabinets in the bedroom. Four lumiline lamps are mounted on Wiremold Plugmold as shown around the mirror. When the mirror and counter top are lowered a door switch turns off the lamps.

Lumiline lamps around the makeup mirror are not too bright but give ample lighting

Instead of gripes, constructive solutions to labor and public relations problems were sought as

Contractors Estimate Their Jobs

. . . in groups of six or eight, each assigned a specific question to discuss and answer

What contractors themselves want, not what a national program supposes they want, came bubbling up from the labor relations problem-solving workshop session that climaxed the June 24-26 joint District 6 and 8 meeting of the National Electrical Contractors Assn. at Reno. It was the first place on the program in which those attending had a chance to work on their own problems and to submit them to national officers as their recommendations and views. For the rest of the program they were told of national programs, policies and objectives and were asked to approve.

There was no approval of the perennial proposals to change the dues structure and the constitution, however. In fact a revolt flared up as the proposal was discussed to raise the minimum dues to $100 as well as the percentage for the small and medium contractors and to reduce that of those who do the million dollar jobs. While there was little discussion over the proposed new constitution that would make the governors the deciders of future bylaw changes, election of officers and similar matters without direct vote of the membership at conventions, more time was asked to study this latest constitutional change idea. It originated, the national officers said, as a result of a study of the form of the NECA by a prominent firm of business management analysts.

The entire conference was a busy affair, with separate breakfast sessions of the California-Nevada, the Northwest and the District 8 Conferences of NECA Chapters, of the Line Constructors Council. Although held in Reno, the pleasure center of the West, every business session was attended by full delegations from all chapters represented. Total registration was about 250. Wives accompanied a large proportion of the delegation and they were well entertained by the Nevada Chapter members' wives. In fact the joint conference of the two districts was felt to be so successful that it was voted to hold a similar one next year in the San Francisco Bay area.

Some forthright and penetrating warnings of trends that have lost to the union contractor large parts of his market were voiced by Don Clayton Sr., president of NECA. (See p 55.) He also warned that apprentices are not being trained in sufficient numbers to take care of retirements and deaths, let alone to man the tremendous volumes of work to keep pace with the industry's generating capacity.

Equally outspoken was Oscar Harbak, vice-president, District 9, International Brotherhood of Electrical Workers, at Saturday's luncheon. In fact he voiced many of the same thoughts that Clayton had warned about. He pledged support to contractors in their efforts to make the installation of luminous ceilings an electrical job. He declared that the two NLRB cases in Los Angeles and Alaska had voided closed-shop clauses in labor agreements.

After reviewing the difficulties besetting it relative to line construction he said the union has had to abandon some of the requirements it has demanded of union contractors in order to retain line work for its members because of potential nonunion competition. In northern California the consolidated line local union has had to be broken up and jurisdiction returned to locals of inside wiremen.

He admitted that the strike by linemen against Southern California Edison Co. had cost electrical contractors the line work they formerly enjoyed from the company. The leadership of the union, he said, was trying to see that too many fantastic conditions do not get into agreements, "We are not going to price ourselves out of the business," he declared. He also urged that fewer cases be taken to the Council on Industrial Relations, agreeing that there were business managers of locals who seemed to like the trip.

That the closed shop not only was going, but in his opinion was gone, was the advice of Paul Geary, executive vice-president of NECA, Washington, D. C. "Frankly the closed shop has been very kind to us. Many will hate to see it go," said Geary. He then went on to advise that all attempts to control low cost bidding be abandoned and that instead contractors look for better ways to get more business. He then enumerated the several programs of NECA aimed at development of more business for the contractor and of making it a profitable business.

Luminous Ceilings—Whose Work?

Beginning with a quick review of lighting practices that have now led to the completely luminous ceiling or artificial skylight, John S. Walsh, chief illuminating engineer, Pacific Gas and Electric Co., San Francisco, predicted this method as the greatest advance and as having the greatest market potential. Robert Schwartz, Schwartz & Lindheim, Oakland, who was chairman of the Friday morning luminous diffusing systems show, then urged contractors to perfect their skills and make a strong selling effort to obtain the installation of such systems for electrical contractors. He then had short talks given, with some demonstrating the installation features of their particular brand, by Rube

Paul Geary, NECA executive vice-president, standing, and Oscar Harbak, IBEW vice-president, were speakers on labor relations

Lagerstrom, representing Luminous Ceilings Inc.; C. T. Bakeman, Wakefield; William Friend, Sylvania; Ken Jones, Honeylite Corp.; Fritz Benz, Smithcraft; John Keyes, Benjamin.

In the closing session a resolution was adopted unanimously calling upon NECA to put a representative in the field to coordinate the efforts of the chapters and aid the contractors to obtain more of this business.

General Electric Lamp Division sent three men from Nela Park, Cleveland, W. W. Becky, C. J. Allen and R. D. Lundgren, who with Paul Schmidt of Oakland, presented pictorially the contractors' opportunities in the selling of lighting. The possibilities for more business in lamps, in modern lighting installations and from maintenance of lighting systems were emphasized and illustrated.

Revise the Estimating System

Never fully appreciated asset of NECA is its estimating system, developed over years of experience. Intensified use resulting from the estimating courses prepared by the research and education department of NECA, headed by E. R. Cornish, formerly of Oakland, has brought forth several needs for revision. One afternoon was devoted to this. Cornish himself headed a panel, each member of which gave his views on one aspect. Then open discussion followed.

First considered was the value of labor units for specific occupancies rather than applied to materials, regardless of where installed. There was little support for such a change. Instead it was felt simple basic data are needed. W. P. Robbins of Salt Lake City explained the removal of job factors from previous labor units and upheld the idea of including them in the estimate summary by the contractor. He alone can judge the weather and working conditions and apply previous experience to it.

President Clayton was caustic in remarking on labor productivity. Not only is labor poorly trained, he said, but so are business agents of the union and cause waste of time. When unions select foremen, often the job steward runs the job instead of the superintendent. Boycotting the use of labor-saving tools he deplored also. Sid Hill of Los Angeles, assigned to talk on data for industrial work, declared industrial maintenance work by contractors is a thing of the past, hence data are unobtainable. To blame are direct sale of materials by wholesalers and prohibitive wage scales and overtime conditions.

For line construction data Robert Hughes of Spokane thought the NECA material should be aimed more toward those who have had little experience. He mentioned the changing trends in line construction, use of more machines, hence the unreliability of past units. Earl Peak Jr. of San Francisco, who taught the estimating course there, advised two separate courses rather than one long one, one for beginners, another for advanced estimators. He also asked for contributions of good plans of small jobs for use in practical exercises. Fast distribution of data on the installation of new materials or systems was asked by some members.

Labor Problem Workshop

Always the No. 1 problem in any contractor group is that of labor relations. But instead of the usual gripe

Grasle **O'Connor** **DeFeyter**

The G-E Lightorama team, W. W. Becky, Paul Schmidt, C. J. Allen and R. D. Lundgren

session E. B. "Pete" DeFeyter, Power City Electric Co., Spokane, and labor relations committeeman for District 6, with the aid of R. L. Wilkinson, Spokane Chapter manager, turned the labor session at Reno constructively into a "labor relations problem solving workshop." Taking three resolutions passed at the last NECA convention, but about which nothing has been done, as a basis, five questions were put to groups of six or eight to talk about and come up with suggested solutions.

The questions related to (1) Public interest in collective bargaining. (2) Discriminatory labor clauses. (3) Skilled labor supply. (4) Improvements to the Council on Industrial Relations system. (5) Should NECA study patterns being set by labor and advise on them? The forthright answers brought out from these groups are being compiled for distribution to the chapters.

In brief the conclusions reported were about as follows:

1. Contractors could not agree in one group, all agreed in another that the public should not be advised of bargaining details, because of the difficulty of having the public understand. The public is being informed by employees indirectly. Some thought elimination of double time would reduce public resistance. Others asked that the NECA advertising inform the public as to all the items in a labor charge the contractor has to pay. The recent actions of the council have not helped public understanding. Contractors and union must work together to eliminate more fringes and costly subsistence and travel rules and serve the public better with better trained men.

2. Discriminatory clauses against outside contractors, plus passive resistance condoned by union and local contractors, the opinion was, react against local contractors by setting up conditions which later hurt them. NECA should have a policy of travel expense.

3. Skilled labor supply could be improved, it was declared, by better apprenticeship training, more of it, more training on code fundamentals, basic tools, and by training older men to learn new equipment and methods. Skill requirements vary greatly. Workmen in small towns need more versatility; city workers are more specialized. The program would be speeded, another group thought, if electricians who reach retirement age do retire; where apprentices exist and are not being employed that they be required to be employed; the union should classify men with special skills to aid contractors to compete for such business; and that the union require its members to keep on learning on their own time.

4. Two separate groups came up with much the same ideas for improvements to the Council on Industrial Relations operation. There should be Western representation on it; setting up a Western council should be considered for Districts 5, 6, 7 and 8. When, because of large number of cases, the council is split to hear them the unanimous decision clause is impossible; national averages should not be used for wages, but only area averages; no case should be submitted until the anniversary date has passed (if both parties knew they had to continue negotiations they might not be so hasty in going to the council); seek IBEW help in persuading locals not to go to the council; where a member of the council is from the jurisidiction from which a case is submitted, provision for an alternate should be made; the wage and economy situation in an area should be given more thought; decisions rendered should be explained; they should be on the basis of evidence submitted, not on outside factors not introduced.

5. The patterns referred to are those of fringes to wages, such as health and welfare, vacations, etc. It was felt that it is time to stop granting of fringes; that if unions insist upon them they be willing to give on the wage base. All agreed NECA should study such trends and be in position to advise. The reservation was made, however, that chapters should ask for such information, not that NECA should promote such fringes.

Each group had as its chairman the labor relations committeeman from one of the chapters. As members entered the meeting room they were given copies of the questions and assigned to a group to join.

Out of this session came a resolution asking that the council be set up as a Western and an Eastern council with assured contractor representation from the area of men familiar with the conditions in it.

There were sessions on business development and advertising, presented by A. L. Berg of Los Angeles; breakfast sessions of the chapter conferences at which W. R. Grasle was nominated for District 6 vice-president and Charles Simpson, incumbent, and Phil Robbins for District 8 vice-president. Simpson and Buttner shared in programming and presiding. The Nevada Chapter proved a wonderful host.

Line construction problems, discussed in sessions under Bob Hughes, Spokane, Charles Wikel, Los Angeles, and Larry Rodgers, Portland, deserve a future article.

IES

San Diego Chapter, Illuminating Engineering Society, elected J. Walter Howard, General Electric Lamp Division, as its chairman for 1954-55 to take office Oct. 1. Vice-chairman is to be C. J. Bunce, Bureau of Home Appliances; secretary-treasurer, Gordon S. Kimball. Howard and Alan J. McCutcheon Jr., residential lighting consultant, San Diego Gas & Electric Co., shared the program on residential lighting at the June 3 meeting.

IES national technical conference is to be held at Chalfonte-Haddon Hall Hotel, Atlantic City, Sept. 13-17. A number of Westerners are preparing to attend to represent the area. Winners of the two original contests on "My Most Interesting Lighting Installation" will have their presentations entered in the national contest.

How continuous product development insures your system investment

R. A. Zimmerman and H. G. Barnett (left), Westinghouse distribution experts, consult with utilities the country over on problems relating to system design and equipment application. In the next 11 pages, Bob and the product experts he will introduce discuss some recent developments in Westinghouse apparatus—and what they mean to your over-all system investment.

"Stanley Brown, Chief Engineer, and Ray Salsbury, Manager of Operating and Test of Duquesne Light Company, and John Cross of Westinghouse discuss progress made in substation engineering."*

**Manager, Power Equipment Sales*

Duquesne Light Company has enjoyed improved public acceptance of this substation equipment in its territory.

YOU CAN BE **SURE**...IF IT'S

This totally-enclosed substation design further insures your system investment

When you consider all of the progress made by Westinghouse engineers, cooperating with the Electric Utility Industry, in the design of "CSP"® single-feeder unit substations—the increased protection of your system investment becomes apparent.

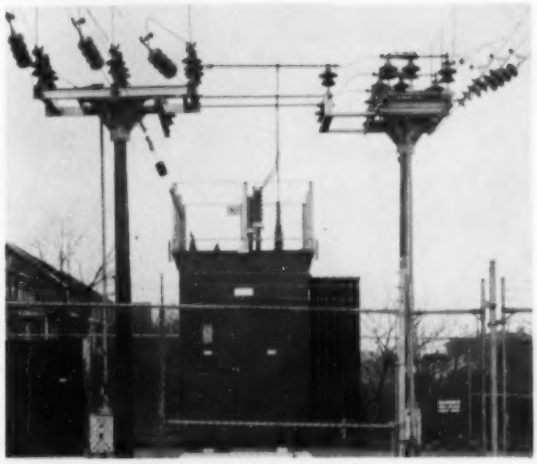
Traditionally, either overhead or underground connected, "CSP" power transformers have been easy to handle and install. Now, in cooperation with Duquesne Light Company, the latest advance is the contoured unit which, more than ever before, protects your investment due to its improved flexibility. For instance:

CONTOURED DESIGN makes your substations more attractive, more acceptable to the public, enabling you to base your selection of an installation site more on *system efficiency*—and less on real estate values and residential or commercial restrictions. The "CSP" arrives ready to install, without the complication of overhead connections and switching. All components are in one compact enclosure.

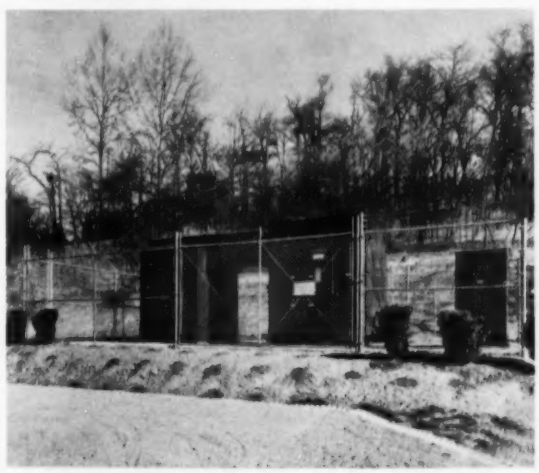
SIMPLIFIED UNDERGROUND CONNECTION. Adding still further to compactness, "CSP" power transformers are easily adaptable to underground connection. Recent improvements have added to the general ease of installing or moving this equipment.

HIGH-VOLTAGE SWITCHING enables you to draw power from either of two incoming lines or from transmission loop. In addition, primary and secondary "plug-in" facilities have been provided to permit maintenance work on the unit while being bypassed by a portable substation without interrupting load.

Design progress like this has done much to insure your system investment. Extensive Westinghouse facilities for engineering research give promise that this progress will continue.



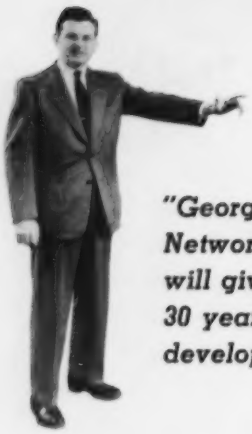
Original method of installing the "CSP" power transformer with open-type overhead connection and separate open-type high-tension switching.



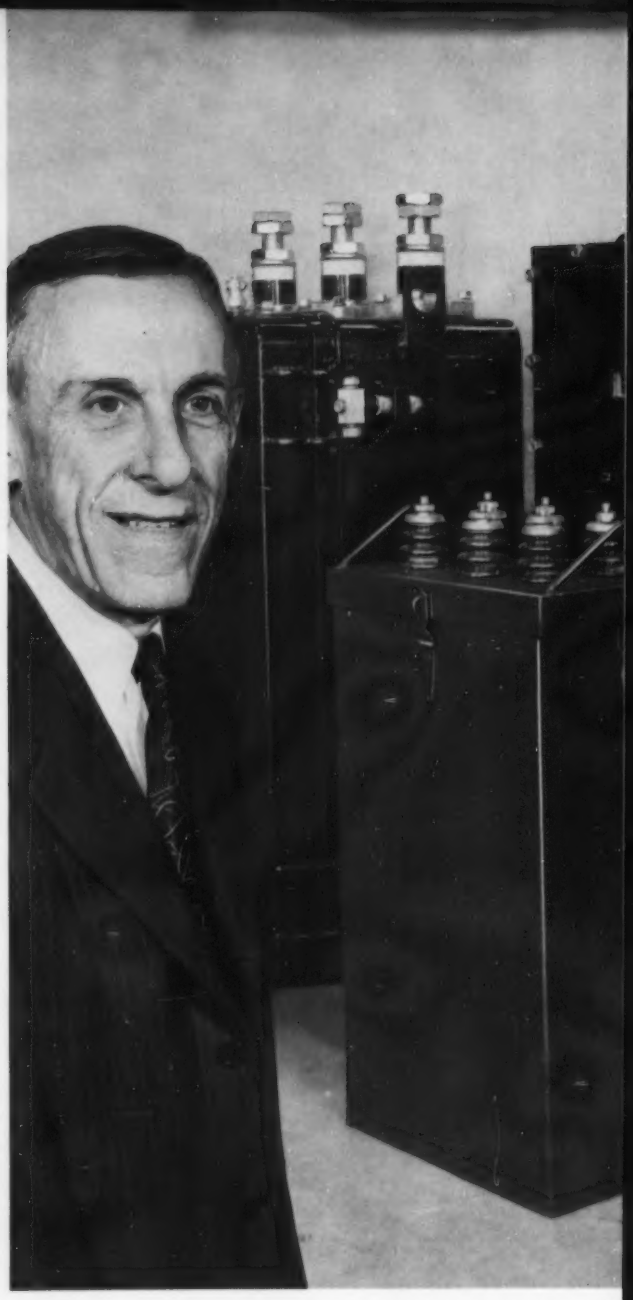
"CSP" power transformer, underground connected, with separate, high-voltage switching supplied by the customer.

Equally tremendous strides have been made in network protector design. See next page.

Westinghouse



"George Grissinger, Manager Network Protector Engineering, will give you the results of 30 years of network protector development."



Protector progress broadens application, cuts maintenance

Over the years, Westinghouse network protector development has aimed to do two things: (1) extend the benefits of secondary networks to more areas on your system; (2) give you protectors unequaled for reliability, convenience and low maintenance.

Starting back in 1923, with the first protector ever developed, Westinghouse pioneered the expansion of network systems. Three basic units—the CM-22 heavy-duty submersible unit, the CM-44 medium-duty underground or overhead unit and the CM-88 light-duty overhead protector—have extended the proven economic advantages of secondary networks to practically all the major areas of your load.

Product-wise, Westinghouse network protectors have been perfected to an unusual degree. Capacities have been stepped up to 3000 amperes—size and weight have been substantially reduced. De-ion® circuit breakers, front-mounted lever-type mechanisms, and smaller yet more dependable relays have contributed to over-all protector size reduction.

Design improvements have steadily reduced maintenance costs—maintenance period for modern units is two years. De-ion arc chambers reduce breaker contact duty. Knife-edge relay bearings minimize friction. Routine checks are speeded by the elimination of all adjustments (except relay settings) and by the quick-opening housings, dual-motion hinges, and captive hardware. The use of the same master relay—the CN-33—on all three protector types allows easy, economical expansion of your network systems—simply by replacing a light load protector with a heavier one.

YOU CAN BE **SURE**...IF IT'S

"Harold Fahnoe, Manager Switchgear Distribution Apparatus Engineering, describes a new recloser development that will save you money."

Low-cost 50-amp recloser designed for smaller three-phase loads

Every time you're forced to buy larger equipment than you need for a particular application, part of your investment is wasted. To help you avoid this, Westinghouse distribution engineers are constantly broadening product lines to match specific needs.

A good example is the new Westinghouse 50-amp, three-pole recloser designed for use on smaller three-phase loads where greater interrupting capacity is not necessary. It gives you the level of protection you require for these applications, but saves you the premium formerly paid for larger capacity.

You get many of the same design features and the same reliability in the new 50-GR-3 recloser that you buy in larger Westinghouse units. The semi-enclosed De-ion interrupter provides positive protection for all fault currents within its range. Selective tripping gives you a choice of either one instantaneous and three time-delay, two instantaneous and two time-delay, or four time-delay trippings for coordination with other reclosers, sectionalizers and fuses. Single tank speeds maintenance.

The 50-GR-3 is available both electrically and manually operated. When any one pole unit reaches lockout position, all three pole units will open. The manual reset lever closes all three simultaneously.

New products such as the 50-GR-3 recloser are tangible evidence that Westinghouse product development is constantly helping you improve system efficiency with minimum investment.

Another important money-saving development is spelled out on the next two pages.

Westinghouse

"Bob Rung of the Transformer Division points out how the latest application of Hipersil® steel pays off for you."*

*Manager, Distribution Equipment Sales

This drawing shows TC core iron circuit designed for greater size reduction and weight savings.

New TC core design cuts size and weight of three-phase distribution transformers

When you consider ways and means to get the most out of your system investment, distribution transformers command a major share of attention. This is particularly true in the proper application of three-phase units. Anything that will simplify this problem is of direct benefit to you.

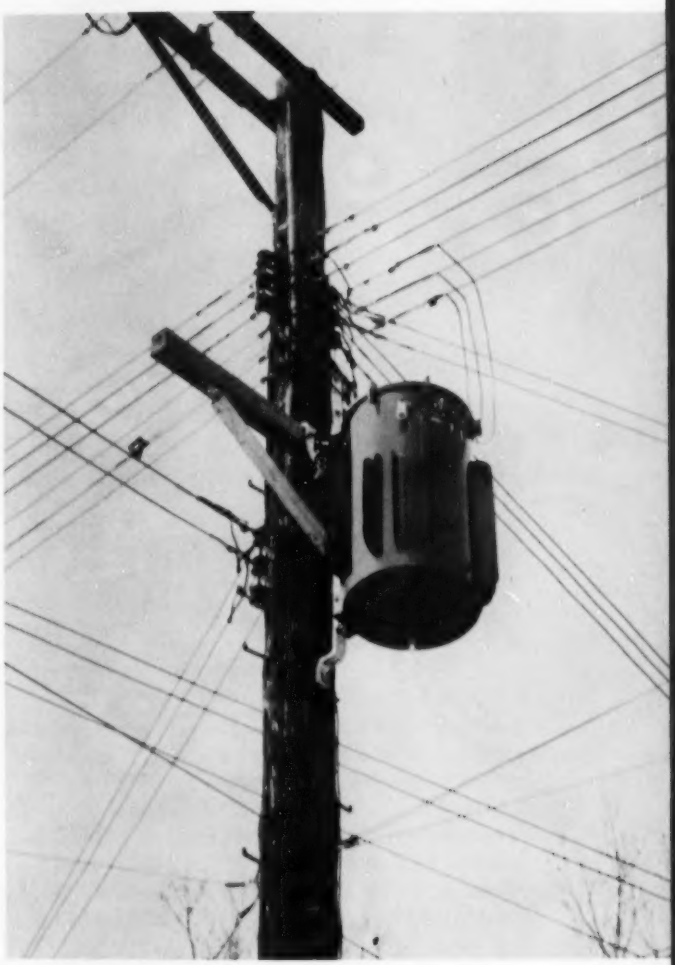
To date, the TC core three-phase unit provides the best solution.

There is a growing three-phase load trend due to the increasing use of commercial air conditioning and other three-phase motor loads. Traditionally these loads have been handled by banking three single-phase conventional distribution transformers. This was the best answer since previous three-phase units were both heavy and cumbersome.

New TC core construction solves size, weight problems. The recent application of Hipersil steel to three-phase distribution transformers means that now a 75-kva unit weighs only 1300 pounds and fits a round tank only 22″ in diameter. The superseded model weighed 1730 pounds and required a rectangular tank 18″ x 27″. This substantial reduction in size and weight means money saved in handling, installing or storing these units.

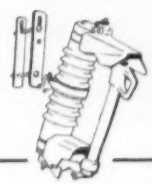
In addition, the three-phase "CSP"® transformer using the TC core solves your protection problems as well. First, its expulsion arresters (LX-T) give positive protection against lightning. Second, its protective links prevent line lockout. Third, its three-phase gang-operated breaker protects against overloads and short circuits. The breaker also prevents single-phase voltage from being applied to the secondary terminals.

Research means progress. Research to further improve Hipersil cores is going on right now in Westinghouse laboratories in cooperation with utility and steel-producing people. The improvements that are sure to come will promote even greater savings in your system investment.



Shown above is a typical direct-pole-mounted three-phase TC core distribution transformer.

Now, let's look at another development that will reduce your system investment.



YOU CAN BE **SURE**... IF IT'S

Westinghouse

"Here's John Harder (right) Switchgear Distribution Apparatus Design Engineer, with the latest development in the new DX cutout."

Heavy-duty fuseholder increases capacity of DX cutout

Here's an outstanding example of how even a new product can be made more useful—to more customers—through constant engineering development.

Only a few months ago, Westinghouse engineers introduced the DX cutout—the simplest, most rugged open cutout ever built. Now, a new heavy-duty fuseholder has been developed which literally doubles the usefulness of the DX by increasing its interrupting capacity.

Replacing the standard fuseholder in your present DX open cutout with the new heavy-duty fuseholder automatically increases its capacity as follows:

	Interrupting Capacity	
	Standard	Heavy Duty
5.2 kv	3,000 amperes	5,000 amperes
7.8 kv	3,000 amperes	5,000 amperes
15.0 kv	2,000 amperes	4,000 amperes

Nothing was spared to insure the absolute reliability of the DX over years of weather and rough handling. Sleet shields are extra wide—insulators extra large, with no recesses or reduced sections. Contacts are oversize and generously silver-plated. The toggle mechanism, fuseholder, and hinge are designed so simply that nothing can go wrong in closing, opening or re-fusing.

YOU CAN BE **SURE**...IF IT'S

"H. J. Lingal, Switchgear Protective Devices Engineering Manager, reviews how you benefit by Westinghouse leadership in high-voltage disconnect development."

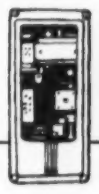
Latest disconnect advance: the first switch to interrupt load current safely

This inexpensive Westinghouse VLB switch is the first to safely interrupt load current on high-voltage transmission lines. It's the high point of 20 years of intensive development by Westinghouse—all aimed at giving you more value, better performance and wider application of load break devices.

Here's what you've gained in those 20 years. In 1934, the LC switch, the first with multiple-line silver contacts—self-cleaning and self-aligning even after thousands of operations. Today, the LC is practically unchanged, proof enough of value you've received. In 1939 you got the Type V, the first truly economical outdoor high-voltage switch. Beryllium cobalt contacts, permanently lubricated Oilite bearings and just three moving parts set new standards for both economy and reliability of operation. A few years later, the field-proved features of the Type V were incorporated in the Type RL, still the *only* shuntless, horizontal, side-break switch available.

The latest Westinghouse advance, the VLB, adds an interrupter to the Type V air-break switch—and solves a long-time problem in high-voltage switching. The arc *cannot* develop into a system fault because it's completely enclosed in a permanently sealed interrupter chamber filled with sulphur hexafluoride, a gas with an arc interrupting ability 100 times greater than air. The VLB will interrupt line charging current, transformer magnetizing current, or up to 600 amps of load current—will operate 500 times without maintenance, as proved in laboratory tests.

For news of another "first" in system protection, turn the page.



Westinghouse

"Relay Sales Engineer Frank Fitzpatrick has an important announcement about a new development in loss-of-field protection."

New loss-of-field relay protects system stability and the machine

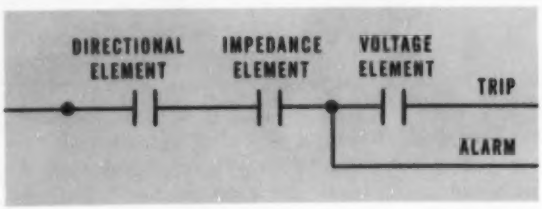
The new HLF single-phase relay was developed by Westinghouse to meet a real need among utilities—low-cost, automatic loss-of-field protection for synchronous machines.

The HLF should be applied to every machine where loss of excitation could result in system instability or damage to the equipment. This application can be made *without* relay modification.

Here's how the HLF relay works. Under loss-of-field conditions, the relay operates an alarm to warn the operator that corrective measures are needed. If there is danger of system instability or of damage to the machine, the HLF will automatically trip the machine. See simplified diagram at right.

The HLF relay is the result of extensive studies by Westinghouse engineers of loss-of-field effects on all types of synchronous machines. For a report on these studies, write for a copy of B-6373 by checking the coupon on the last page of this section.

The development of the HLF relay is typical of work going forward constantly at Westinghouse to help you protect your system investment.



Simplified trip circuit diagram of the new HLF relay. Under conditions of low excitation, the impedance and directional elements of the HLF operate on alarm. With a continued drop in system voltage below a predetermined level, the voltage element sets up the trip circuit.

YOU CAN BE **SURE**...IF IT'S

"Newman Henry of the Transformer Division discusses some important points in instrument transformer development."*

*Section Manager, I & R Division, Transformer Engineering Department

Accurate, reliable instrument transformers help insure your system investment

Proper operation of your metering and relaying devices, as you know, depends to a large extent on instrument transformers. Their accuracy and reliability are imperative. Therefore, Westinghouse engineers never cease searching for improvements.

The following developments are evidence of progress to date. Each is a Westinghouse "first".

Reliability has been substantially improved by the Westinghouse development of a process for vacuum plastic impregnation; by hermetic sealing using degassed oil; as well as by production-line impulse testing and by the protection of "Coastal Finish."

Accuracy has been improved by application of nickel alloy steel; by grain-oriented steel; and by Type C core construction. Westinghouse, too, developed the first dry-type current transformers to meet present-day impulse values.

These are a few from a long history of Westinghouse advancements . . . each an important step in the development of present-day highly accurate and reliable instrument transformers.

For more on a specific materials research project, see the next page . . .

Westinghouse

A transformer division report on 2 years of insulation power factor progress shows:

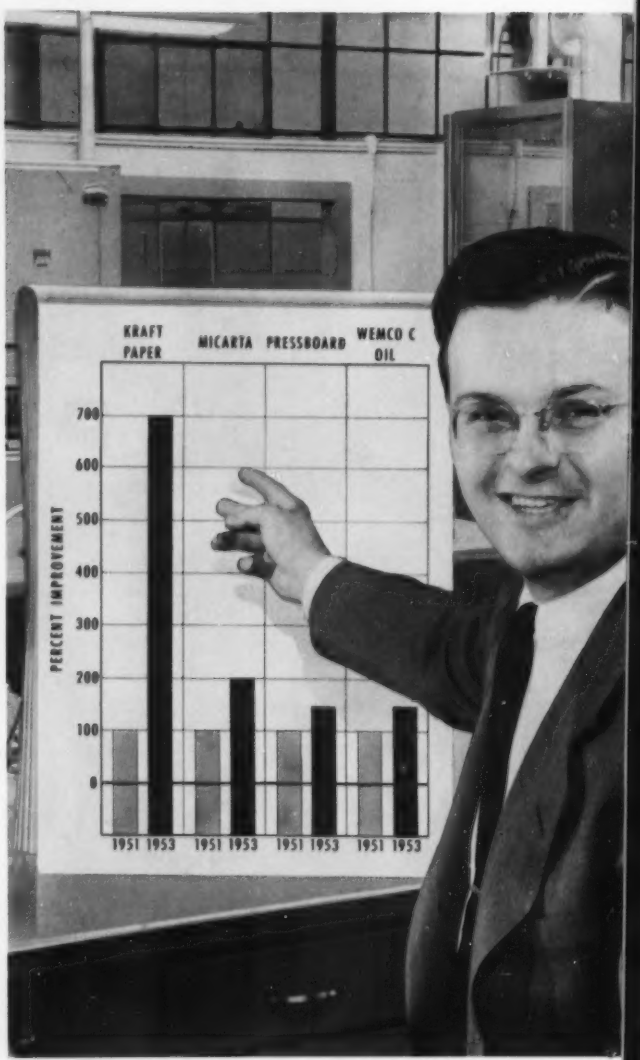
700% better kraft paper
200% better Micarta®
130% better pressboard

The Westinghouse Transformer Division at Sharon, Pa. spends a lot of time, materials and man power in improving every phase of transformer reliability. One of these phases—highly important to your system investment—is insulation power factor.

Every material associated with insulation—including paper, pressboard and Micarta, to name a few—is constantly under the critical eye of laboratory specialists. Proof that their work pays off is a 700% improvement in insulation power factor of kraft paper . . . 200% for Micarta . . . 130% for pressboard, and Wemco® C Oil . . . in just 2 years. There are other examples just as impressive.

Such progress means a lot to you. It means that you get greater protection against internal faults in all your Westinghouse transformers. Power factor losses can be dissipated before insulation can be affected . . . and, more importantly, before your system equipment is affected.

The Electric Utility Industry has made steady progress in meeting the growing electrical load . . . while still maintaining a practical balance in system investment. This progress depends on research and development as is conducted by your utility and by manufacturers like Westinghouse. CP-1017



YOU CAN BE SURE...IF IT'S
Westinghouse

More information?

Your nearby Westinghouse Representative is the man to call. Or use the handy coupon below. Mail to Westinghouse Electric Corporation, 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pennsylvania.

Gentlemen: Please send literature checked below:

- ☐ "CSP" Power Transformers.....DB 48-100
- ☐ Network Protectors.....DB 35-500
- ☐ Type GR-3 Reclosers.....PL 38-720
- ☐ Distribution Transformers.....DB 46-110CSP
- ☐ Open Fuse Cutouts, Type DX.....DB 38-620
- ☐ Outdoor Load Interrupter Switches...CS 36-155
- ☐ HLF Relays.....B-6373
- ☐ Instrument Transformers.....PL 45-100

Name.....

Title.....

Company.....

Street.....

City..... State.....

CP-1017

Human Relations Subject of Joint Meet

Supervisory development, company communications and collective bargaining were main topics at the joint meeting of the Industrial Relations Committee, Edison Electric Institute, and the Personnel and Safety Section, Northwest Electric Light & Power Assn. in Portland, July 12-14.

Fred R. Rauch, Cincinnati Gas & Electric Co., chairman of the Industrial Relations Committee, and Pat Holton, Utah Power & Light Co., chairman of the Personnel and Safety Section, presided. NEL&PA President A. W. Trimble, Pacific Power & Light Co., welcomed the group.

Discussion was covered in panel form in three half-day sessions with the fourth serving as a "clean-up" session. Major subjects were: supervisory development, including selection, training and evaluating performance; communications within the company, taking in economic education and person-to-person communication; collective bargaining and contract administration. Panel leaders were, respectively: D. M. Pritchett, California-Pacific Utilities Co.; Roland Blantz, Portland General Electric Co.; Peter Piper, Washington Water Power Co.

The accident prevention and safety supervisors of the Northwest companies, who form part of the section, held their own session on July 13 and took part in field trips and inspection tours on July 14. E. J. Eliason, Utah Power & Light Co., was chairman.

Luncheon speakers were E. Robert de Luccia, vice-president and chief engineer, Pacific Power & Light Co., and W. Lloyd Vinson, business manager, IBEW Local 125, Portland.

In the Pacific Northwest, where the highest wage levels in the utility industry prevail, electric rates are less than half the national average, Vinson pointed out in support of his contention that high wages in the industry do not mean higher rates for consumers. Attributing this to the good industrial relations history of the region, he said: "Intelligent bargaining and application of the rules have resulted in a climate of cooperation whereby company management has been encouraged to create labor-saving devices and labor is willing to experiment and adopt novel methods and equipment."

He paid tribute to Scott Milne, former Portland IBEW head and now International president, saying that he represented the type of intelligent leadership that has characterized the union's activities in the Pacific Northwest. The association membership joined with Vinson in recognition of Milne's election to the high post.

Pointing to the misunderstandings and misapprehensions about the Eisenhower administration's partnership concept of hydroelectric power development, de Luccia declared that partnership between local REA and PUD groups, municipals, private companies and the federal government had been functioning since before World War II. As examples he cited the operation of the Northwest Power Pool and the organization known as the Tacoma Conference, whose findings on operation and policy are in an advisory capacity looking toward the common welfare. The Governors' Committee formed from the Columbia Basin Interagency Committee is another example of partnership concept at work on a higher level, he said.

Result of the partnership program will be to spread the available federal dollars further and relieve the U. S. treasury of power costs of multiple-purpose projects, he stated.

At the concluding business session of the NEL&PA Personnel and Safety Section, Peter Piper, Washington Water Power Co., moved up from the vice-chairmanship to succeed Holton as section chairman and Russell B. James, Portland General Electric Co., was elected vice-chairman.

IAEI

Quite different from past annual meetings will be the program at the Southwestern Section, International Association of Electrical Inspectors, convention at Elko, Nev., Sept. 13-15, according to E. E. Carleton, its president. While full details of the program have not yet been announced, Carleton said that more of the workshop type of session will predominate. While this will not devote as much time to National Electrical Code revision as former meetings, there will be ample opportunity to discuss proposed changes.

Instead, it is likely that the various sessions will be assigned to the several phases of an inspector's job. There may be a session on the administrative problems of running an inspection department. Other sessions will be devoted to desirable changes to the National Code, study of what local extra requirements will be needed under certain conditions, the inspector's public relations. Specific problems may be presented and groups assigned to making recommendations for their best solution.

Meanwhile, the Nevada Chapter and the Elko electrical industry, led by M. E. Lundberg, Elko-Lamoille Power Co., are making plans for a Western type of entertainment for the delegates and their wives.

A contest among members for essays of 250 words or less on the subject "Why I Belong to the IAEI" will be run. To initiate the contest at the Northern California Chapter, Chairman Chet Hefner, Redwood City, presented a paper on that subject at the May 22 meeting.

Northern California Chapter, IAEI, had a clear explanation of the classes and divisions of explosion hazard and a demonstration of equipment designed for installation of electrical wiring in such locations given to it by William Major and Towner Buckley of Crouse-Hinds Co., San Francisco, at the San Leandro July 14 meeting. Chet Hefner, chairman, Redwood City, presided. Ernest Nelson, San Leandro, chief electrical inspector, made arrangements for the meeting at the Peterson Tractor Co. Next meeting will be Nov. 10 at Napa.

IES-EMEA

For 14 years the Electrical Maintenance Engineers Assn. of Southern California and the Southern California Section of the Illuminating Engineering Society annually have held a joint meeting. More than 200 attended the last one at Rodger Young Auditorium, Los Angeles, June 16, when Dr. Harry Goodman, optometrist, Roy Bevan, Sylvania, and Robert Ford, Smoot-Holman Co., provided the enlightenment. Dr. Goodman stressed the need for more knowledge of the function and operation of the eye. Bevan gave a quick review of the fundamental definitions, terms and formulas; and Ford applied these to practical applications. IES Chairman Don Prideaux presented a certificate of award to D. M. Reynolds, lighting specialist of the Southern California Edison Co., for winning second place in the IES regional "My Most Interesting Lighting Job" contest in San Francisco.

At a previous EMEA meeting, Max F. Selby, instructor in industrial electricity and electronics, Los Angeles Trade-Technical Junior College, presented the "New Look" that electronic applications should be given for industrial purposes.

W. Day Dorland, field instructor for International Business Machines Corp., presented a film and discussed the electronic data processing machines now available to be used in industry at the July 21 meeting.

Give wires and cables

by specifying Rome · RIGID

It Costs Less to Buy the Best

ROME CABLE
Corporation
ROME · NEW YORK
and
TORRANCE · CALIFORNIA

WESTERN SALES OFFICES AND WAREHOUSES

SALT LAKE CITY 1, UTAH
230 South 4th West St.

LOS ANGELES 22, CALIF.
2510 South Malt Avenue

SAN FRANCISCO 24, CALIF.
1100 Selby Street

SEATTLE 4, WASH.
3430 Fourth Ave., So.

DENVER 3, COLO.
1160 Elati St.

PORTLAND 5, ORE.
1020 S. W. Taylor St.

maximum all 'round protection

STEEL CONDUIT

assures rapid, cost-cutting installation

Here is a really new and better steel conduit that assures you the maximum in safety and service life—yet cuts installation costs to the bone.

Eliminates Oxidation and Scale

Rome Rigid is the only rigid steel conduit cold formed from shot-blasted steel. Thus it provides the cleanest surface known, eliminating the oxidation and scale ordinarily present with hot formed pipe.

Electrically Welded for Extra Strength

You can count on superior strength and uniformity of ductility, dimensions and concentricity because Rome Rigid is the only rigid steel conduit that is electrically welded.

Hot-Dip Galvanized

Finally, new Rome Rigid is the one and only rigid steel conduit hot-dip galvanized by the patented Sendzimir* process (the time-proven, superior zinc coating for steel). It has exceptional resistance to corrosion.

Easy to Install

You also can depend on easy cost-cutting installation when you specify Rome Rigid. First, its uniform diameters and careful threading assure easy connections. Second, its mirror smooth, "clean as a shotgun barrel" interior, free from burrs and rough edges, permits easy pulling and eliminates injury to cables.

Available in 10-foot straight lengths, as well as 90° elbows. Sizes are ½" to 6". Fully approved by Underwriters' Laboratories, Inc., Rome Rigid meets all requirements for safe steel raceway . . . plus uniformly high quality. See your electrical wholesaler or call your nearest Rome Cable office today.

*Rome is the first and only manufacturer to apply the famous Armco method of zinc coating to the hot-dip galvanizing of rigid steel conduit.

Precisely Heated—In the Sendzimir process, the formed pipe is precisely heated, uniformly oxidizing inside and outside surfaces and completely burning off all surface grease or dirt. Conveyed into another furnace under a carefully controlled reducing atmosphere, the oxide coating is reduced to virgin metal. Actually, the furnace atmosphere of hydrogen combines with the oxygen in the oxide coating to turn the pipe surface to almost the brightness of stainless steel. Here is the cleanest metal surface known.

Never Comes in Contact with Air—Cooled in the same atmosphere to a heat of 850°, just above the temperature of the zinc bath, the bright pipe enters the molten zinc without ever coming in contact with air. Its virgin clean surface is instantly coated with pure zinc, inside and out.

Eliminates Flux—The Sendzimir process produces a superior zinc coating for long-life protection. It eliminates flux which is often trapped and eventually eats its way through the zinc. It provides a uniform bond between bright, clean, raw metal and molten zinc. It is a process that has been used on sheet steel by Armco for fifteen years in establishing a standard of quality unrivalled in the steel industry.

Utah-Idaho Chapter NECA officers are W. Phil Robbins, governor (and candidate for District 8 vice-president), C. I. Berrell, president, and Floyd Shipp is manager

Elected during the Reno conference were Nevada Chapter NECA's new officers, Andy Mainland, president; R. J. Reitz, governor, both of Las Vegas; M. Jim Jeffers, chapter manager, and Lyle Smith, vice-president, both in Reno

Newly formed Southern Colorado Chapter of NECA is headed by Keith Wilson, Electrical Construction Co., president, and Bob Whitney, Whitney Electric, governor

Sales opportunities and installation simplicity of luminous diffusing system for area lighting were shown Northern California Chapter NECA members in the first of a series of such meetings. Walter Vance, Robert Schwartz, Fritz Benz demonstrating, Ted Bakeman and Rube Lagerstrom are seen at the head table in this photo

NECA

Whether they are called luminous ceilings, luminous diffusing systems or area lighting systems, electrical contractors and electrical workers claim them as electrical. A series of meetings in California sponsored by National Electrical Contractors Assn., to alert contractors to the sales opportunity, were held in San Francisco and Oakland, San Rafael, Los Angeles and at the regional meeting in Reno. Robert Schwartz of Schwartz & Lindheim, Oakland, initiated the first meeting in the Northern California Chapter May 24. Matt Sherwood, field representative, NECA, arranged for similar meetings in other chapters.

Representatives of at least six manufacturers of lighting equipment, which includes both the fluorescent lighting strips and the plastic suspended diffusing ceiling below them, described the methods of installation of their various systems.

Cheyenne Division of Rocky Mountain Chapter, NECA, held its annual apprenticeship training completion ceremony at Sky Trails Inn recently, presided over by John E. Peters, D. H. Norman of local union No. 415, IBEW, and C. H. Simpson, District 8 NECA vice-president, of Cheyenne. Don Larson, chapter manager, presented certificates to A. S. Blackham, Earl W. Diemel, Floyd W. Harrison Jr., Harvey M. Humphrey, John E. Kahler and Tom H. Kristensen. Among other notables were W. C. Van Horne, instructor; "Steve" Stevenson, 55-year apprentice; Homer Moyer, business manager, local union No. 415; O. N. Buckles, Cheyenne NECA chairman; Charles Carson, bureau of apprenticeship; Maurice Mann, director of vocational training; E. G. Edgar, chairman, and A. J. Simpson, secretary, joint apprenticeship training committee, and its members Steve Marko and Francis Fitch.

Nevada Chapter, NECA, at a breakfast during the District 6 and 8 conference last month, elected new officers. Governor is R. J. Reitz, Las Vegas; president, Andy Mainland, Las Vegas; vice-president, Lyle Smith of Reno; and Joe Pelezzari, Reno, treasurer. Directors are Verl Ashworth, Las Vegas, William Urga, Las Vegas, Lou O'Neil, Reno, and F. E. Stanton, Reno, past president. M. Jim Jeffers Sr., manager, was re-elected.

Newly formed Santa Clara-San Benito Chapter, NECA, of San Jose announced election of Irving Butcher, Roy Butcher Co., as chapter governor. George Harter, manager, also announced that a new uniform code had been adopted by Santa Clara County.

Los Angeles Chapter again has an Estimators Club as a result of the estimating course completed in June. Meetings will convene again after vacation. It is patterned after the Chicago association club. Los Angeles had one of the original estimators sections in the country under the old California Electragists in the 1920s.

This miniature 2-Way GOABS installation shows how the vertical phase spacing of the GOABS permits time and money saving one-pole mounting.

"GOABS can save you 25% in installation costs over conventional air break switches"

Says L. R. (Les) Crane, *Manager of Sales, Switching Equipment, A. B. Chance Company*

Many users of GOABS (Gang Operated Air Break Switches) report savings of at least 25% in installed costs compared to conventional type air break switches. Such savings are accomplished because GOABS mount on a single pole. This eliminates the need for multi-pole structures and reduces installation time to approximately one fourth of the time required for conventional installations.

Because of their vertical phase spacing and one-pole mounting, GOABS are convenient and economical to install at any tap point, particularly where multi-pole construction is undesirable or impossible; or where a tap is to be made from a vertically spaced circuit, as one circuit of a double circuit steel tower line.

You can get GOABS in 600 amperes, 15, 23, 34.5, 46, and 69 KV ratings.

Requires minimum right of way

Substation switching, loop interconnections or sectionalizing can be accomplished from a single switching point by the GOABS. With the GOABS you eliminate the need for costly extra real estate needed as right of way for conventional air break group operated switches mounted on H-frame structures. Investigate the GOABS today. They are convenient and economical to install at any tap point and are a real trouble-saver for installations where land costs or space limitations prohibit H-frame construction.

Saves valuable line crew time

GOABS are easy to install. Each complete phase of the switch is pulled up as a unit and bolted to the pole. No assembly is necessary on the pole. Mounting the switches on a single pole requires far less hardware and eliminates so many extra operations that expensive line crew time for installation is reduced to one fourth of that normally required for multi-pole structures. A GOABS installation is easy to maintain, too—the vertical phase separation provides 180° free climbing space for linemen.

Bulletin 601-A gives complete information. Write for your copy today.

CS54-10

ABC INDUSTRIES

A·B·CHANCE CO·

CENTRALIA, MISSOURI • SAN FRANCISCO, CALIFORNIA

NORTH—Shakopee, Minnesota praised the performance of its Form 206 luminaires. The new lights provide superior illumination even in sub-zero weather.

EAST—Central Maine Power Co. accomplished their working objective of providing better street lighting economically by installing Form 206 fluorescent lights at Auburn, Maine.

NEW G-E FLUORESCENT STREET LIGHTS GAIN NATIONWIDE ACCEPTANCE

Are fluorescent street lights practical? Utility and municipal officials who have installed G-E Form 206 fluorescent luminaires are best qualified to give the answer. Their actual field experience, in all parts of the country, is summarized in the following questions and answers.

WHY USE FLUORESCENT STREET LIGHTING?

Fluorescent street lighting provides better visibility and a more even light distribution than the best engineered systems of either filament or mercury lamps. The low brightness of the light source reduces the glare and eye strain that accompanies other types of street lighting.

IS VISIBILITY IMPROVED?

Yes. Many lighting experts believe that fluorescent street lighting increases actual visibility by about one-third. Thus, a 1.25 footcandle level from a Form 206 fluorescent luminaire seems to provide the same visibility as a 1.7 footcandle level from filament or mercury luminaires.

IS THE COLOR OF THE LIGHT PLEASANT?

Yes. The whiter light furnished by the fluorescent lamps does not distort the familiar coloring of objects and people. Businessmen find that shoppers even come from outside usual trading areas to shop under the comfortable light from the fluorescent luminaires.

IS THE SIZE OF THE LUMINAIRE A PROBLEM?

No. The Form 206 luminaire is only slightly over six feet long and the distinctive size and shape add functional beauty to the appearance of any street or roadway. No guys or trusses are required to support the luminaire even in high winds.

WHAT MAINTENANCE IS REQUIRED?

Maintenance is reduced! The fluorescent lamps used in the Form 206 have an average lamp life of 7500 hours, or about two years of street-lighting operation. The hinged plastic globe is shatterproof and is tightly sealed to prevent dirt or insects entering the unit. Sun, rain, heat, cold, or aging do not adversely affect the plastic globe or the light output.

HOW DO COSTS COMPARE?

When over-all lighting costs are computed on an equivalent visibility basis, G-E Form 206 fluorescent luminaires cost less than any other comparable system of filament or color-improved mercury. Although equipment and amortization costs are somewhat higher, installation costs are comparable, and operating costs are generally lower.

GET MORE INFORMATION about this outstanding G-E fluorescent luminaire, the Form 206. Contact your nearest G-E Apparatus Sales Office, or write Section 452-139, General Electric Company, Schenectady 5, N. Y.

SOUTH—Statesville, North Carolina installed 104 Form 206 fluorescent street lights and was enthusiastic about their visual comfort, economy, and modern appearance.

WEST—Virtually glareless illumination and an even light pattern resulted when Seattle installed Form 206 luminaires to light the second level of this new Alaskan Way viaduct.

GENERAL ELECTRIC

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

THE MONTH IN BRIEF

Priest Rapids Authorized

A bill that would permit construction of the Priest Rapids project on the Columbia by the Grant County PUD, a group of PUDs or the Washington State Power Commission has been signed by President Eisenhower. The state commission will ask FPC for a license; has authorized negotiations with consultants for preliminary work on financing. Grant County PUD has had a license application before FPC for some time; reports that it favors two low dams. (The high dam proposal calls for a 151-ft-high structure costing approximately $412,000,000 and producing 1,219,000 kw. Two lower dams, at Priest Rapids and Beverly, would cost $358,000,000 and produce 1,100,000 kw.) Another interested group—PUDs seeking to form State Operating Agency No. 1 under the Washington power act—so far has not been granted state commission approval for organization.

Stevenson Answered

In Oregon last month, Ex-President Hoover denied charges of Adlai Stevenson that he had vetoed the nation's first multiple-purpose hydro project and had said the federal government should get out of the business of generating and distributing power as soon as possible. "What I did say," Hoover stated, "was that the federal government must continue to construct multipurpose hydroelectric dams but . . . should get out of the socialistic and bureaucratic empire building by way of operating the power houses and distributing the power; that the federal government should sell its power at the bus bar . . ." He reminded that he had advocated multipurpose dams when justified for the past 50 years and had had a large part in bringing about construction of the first and largest multipurpose dam in the country.

Also by McKay

In Seattle, Interior Secretary Douglas McKay, commenting on Stevenson's Northwest talks, said that local Democrats were "a little careless with the facts supplied the Democratic leader." McKay said the Eisenhower administration is interested in obtaining more hydroelectric power for the Northwest from all sources at the cheapest possible cost. He ridiculed charges that Republicans are using proposed Libby Dam in Montana as a substitute for Hells Canyon Dam. Libby would be important because of the storage it would impound, thus firming up power generation of down-river dams on the Columbia, he pointed out.

B. C. Project Presented

Formal application for a conditional water license in northern British Columbia that would lead eventually to construction of a $700,000,000 B. C.-Yukon hydroelectric and metallurgical development was presented to the provincial government in Victoria, July 26, by Frobisher Ltd. Meeting with Premier W. A. C. Bennett and Resources Minister Robert Sommers were Thayer Lindsley, head of Ventures Ltd., and a group of mining engineers. The development would be undertaken by Northwest Power Industries Ltd., a subsidiary of Quebec Metallurgical Industries and Frobisher Ltd., which in turn are subsidiaries of Ventures Ltd. If the federal and provincial governments approve the plan, construction of a $270,000,000 hydroelectric project and metallurgical industry, with development of 660,000 kw as the initial stage, would begin next year, it was announced. Planned potential for the completed project is 3,750,000 kw. Metallurgical objectives are: (1) treatment of cobalt-nickel ores and concentrates from Pacific islands; (2) smelting of Pacific Coast iron ores and concentrates for production of pig iron and steel; (3) production of ferromanganese from ores of southwest Africa; (4) treatment of zinc concentrates and other base metal concentrates available in British Columbia.

Partnership for Atomic Energy?

Puget Sound Utilities Council has voted to ask AEC whether any joint action in atomic power development will be feasible. Eugene Starr, recently named chief engineer for Bonneville, will represent the council in talks with the commission. Council membership includes Seattle and Tacoma municipal systems, Puget Sound Power & Light Co. and the Chelan and Snohomish PUDs.

Early Start on Plant

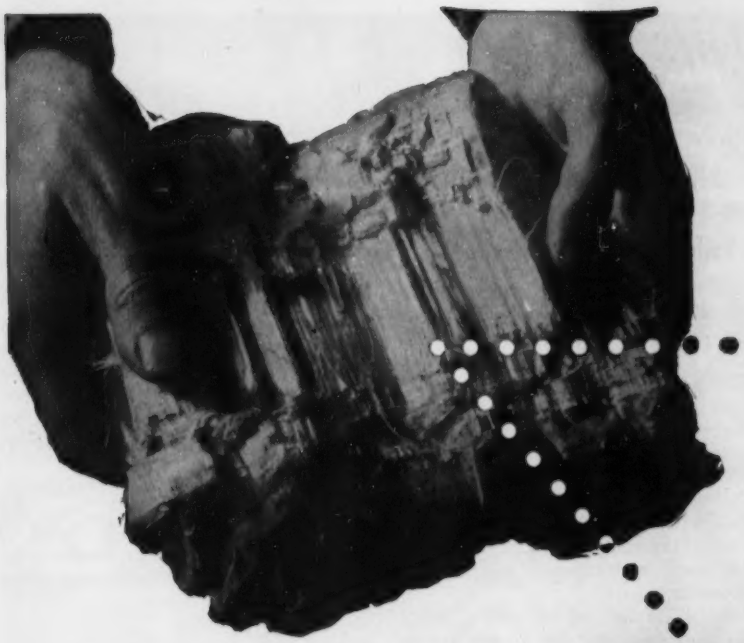
Early completion of its initial financing program will enable Southern Nevada Power Co. to start construction of its 44,000-kw steam plant at Whitney Nov. 1, according to President Reid Gardner. Construction contract for the $6,000,000 plant has been awarded to Stearns-Roger Co. of Denver and an order has been placed with General Electric for the turbine generator. The plant is expected to be in operation by December 1955.

Tudor Gives Up Post

Ralph A. Tudor will resign as Interior undersecretary to return to his own firm in San Francisco on Sept. 1. Clarence A. Davis, department solicitor, will replace him. When he went to Interior in May 1953, Tudor hoped to spend no more than a year on the job; agreed to stay on until after Congress adjourns at request of Secretary McKay.

Defers Action

Federal Power Commission has deferred final action on a motion appealing an examiner's ruling striking testimony of Leland Olds, former FPC chairman, in the Hells Canyon hearings. The appeal was filed by Lewis County PUD and National Hells Canyon Assn.



From the magic mineral

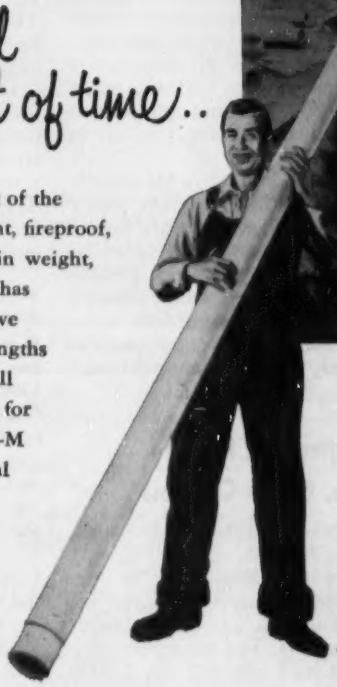
...ASBESTOS

come these strong, durable

TRANSITE DUCTS

made to stand the test of time..

Transite* meets every requirement of the ideal duct material. It is permanent, fireproof, corrosion resistant, strong, light in weight, smooth-bored, non-inductive, and has rapid heat dissipation. No protective coating is required. The 10-foot lengths are rapidly assembled. Transite will outlast other duct materials. Write for new, free brochure showing how J-M Transite Ducts can effect substantial savings in both installation and maintenance of cable subways. Address Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay St., Toronto 1, Ontario.



Available In Two Types:

TRANSITE CONDUIT

Thick walled, used for exposed work, or buried without concrete casement saves time, labor, materials.

TRANSITE KORDUCT

Thinner walled for installation in concrete. Used for high-voltage lines, its high thermal conductivity cuts operating losses.

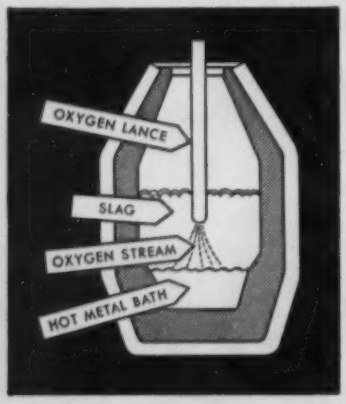
JM PRODUCTS

Johns-Manville

*Trade mark registered

what's NEW in Engineering

To cut refining costs of steel, Kaiser Engineers has acquired the exclusive U. S. rights for the Brassert Oxygen Converter Process of producing high quality steel. Recognized as an advanced development



in steelmaking, the oxygen process promises a definite saving in refining costs of at least $3.00 per ton. Investment cost is also lower, as one 35-ton oxygen converter will produce as much as three 175-ton open hearth furnaces at half the estimated capital investment. Write us for a brochure describing the process in detail.

The largest construction contract in Australia's history has been awarded to the Kaiser-Walsh-Perini-Raymond group of American contractors. With Kaiser Engineers as the project's sponsor, the group will construct a dam and mammoth 14-mile water tunnel through the Snowy Mountains of Southeast Australia.

Asme Handbook Metals Properties. This is Volume I of a four volume handbook sponsored by The Metals Engineering Handbook Board of the American Society of Mechanical Engineers. Published by McGraw-Hill, METAL PROPERTIES tabulates strength, hardness and the other properties of over 500 metals.

Whatever your immediate research, design or engineering problems, however unusual they may be, an early consultation with Kaiser Engineers is an important step toward their quick, profitable solution. Call or write Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

THIS MONTH'S NEWS

Bonneville Reorganization To Follow Recommendations

Sweeping reorganization and streamlining of the Bonneville Power Administration is to be carried out under a directive to Administrator William A. Pearl, based on recommendations of a task force appointed by Interior Secretary Douglas McKay. To meet the problems of a new concept of the purpose and functions of BPA, the task force recommends an organization consisting of four divisions; administrator, engineering, operation and maintenance, administrative management.

In staffing the engineering division the report says that the readjustment will require greater individual workloads, elimination of all unessential activities, limitation of development engineering work and careful screening of all supervisory jobs in excess of reasonable requirements.

The team recommends that operation and maintenance be consolidated under one division; believes that separation of maintenance from engineering and its combination with operations will assure better coordination.

The survey team recommends a reduction in personnel and believes that it will not affect efficiency of operations. Maximum employment recommendations were to reduce top management from 61 to 50; engineering division from 1,006 to 600; O and M from 1,154 to 1,050 and administrative management division from 482 to 400.

Under the new directive the administrator is authorized to make minor adjustments deemed necessary but to submit major changes in recommendations for the approval of the Under-Secretary. Dr. Pearl said that changes will be carried out in an orderly manner over a period of time and in compliance with civil service rules and regulations.

Interim Agreement Reached By Seattle, British Columbia

City of Seattle will be able to impound an additional 200,000 acre-ft of water behind Ross Dam on the Skagit River, as the result of an interim agreement it has reached with British Columbia. The agreement provides that City Light will pay $5,000 for flood rights for the 1954 storage season.

Permanent settlement of flood rights on the Skagit is expected to await settlement on the proposed Libby Dam in Montana, which would back the Kootenai River into British Columbia about 42 miles. The United States government recently asked the International Joint Commission to take up again the Libby Dam negotiations, which broke down a year ago.

City Light's temporary agreement, approved by the city council utilities committee, will make it possible to raise the level of Ross Lake about 18 ft, to be drawn down next winter when power demands are heaviest.

Toketee License Amendment Granted by Commission

FPC has granted California Oregon Power Co.'s request for an amendment to its license for Toketee project on the North Umpqua River in Oregon. As a result two additional hydro plants—Lemolo No. 1 and No. 2—will be built at a cost estimated at $19,916,700.

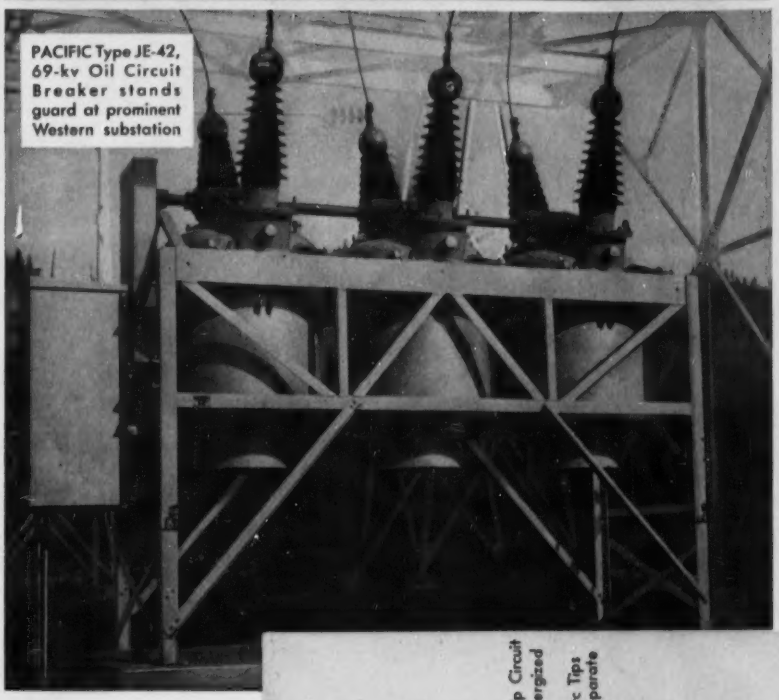
Lemolo No. 1 will include a diversion dam about 910 ft long and 120 ft high, located about one mile downstream from Lake Creek. The reservoir will have an area of 415 acres. The power house will have a 40,000-hp turbine connected to a 29,000-kw generator.

Lemolo No. 2 will be built immediately downstream from No. 1 and will include a low diversion dam and a small reservoir on the North Umpqua; a small diversion dam on Deer Creek. The power house will have a 46,000-hp turbine connected to a 33,000-kw generator.

• **Alaskans** should "interest private firms and other private agencies" in the surveying of potential hydroelectric projects, Secretary of Interior Douglas McKay told the Anchorage Chamber of Commerce July 19. The federal government should be asked to make such surveys "only as a last resort," he said. Power shortages will continue until local interest tackled the problem, McKay declared.

• **At a recent meeting** in Tucson, Ariz., the executive committee of the World Symposium on Applied Solar Energy (EWEST, July, p 102) set the conference date for Nov. 2-5, 1955.

Advanced 69-kv Protection ...Blade-Travel Chart Shows Why



PACIFIC Type JE-42, 69-kv Oil Circuit Breaker stands guard at prominent Western substation

PACIFIC ELECTRIC

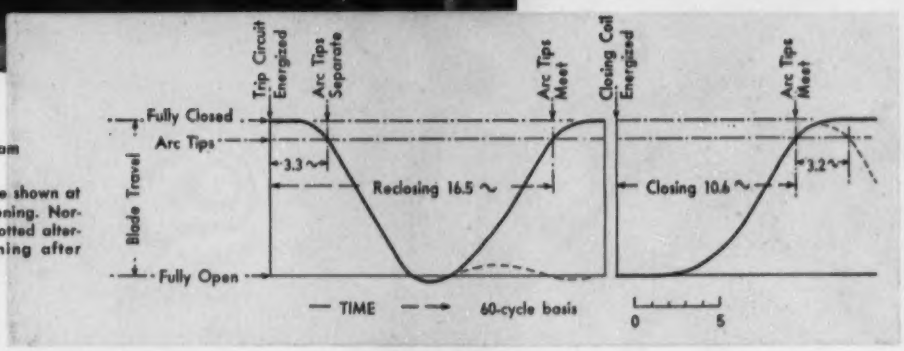
Type JE-42
Frame-Mounted

CIRCUIT BREAKERS

ELECTRICALLY and
MECHANICALLY TRIP-FREE
IN ANY POSITION

NEMA and ASA STANDARD

69 kv	Continuous	Interrupting
	600 amp	1,000,000 kva
(Also other styles	1200 amp	1,500,000 kva
7.5 to 230 kv)	1200 amp	2,500,000 kva



At right: Blade-Travel Diagram (tanks filled with oil)

Open and immediate reclose shown at left of chart. Note full opening. Normal close shown at right. Dotted alternate shows start of opening after closing against fault.

THE APPLICATION Engineer needs only to glance at the blade-travel chart of the Pacific Type JE-42 to know that here is something special and out of the ordinary in 69-kv breakers.

The fast opening and reclosing holds system disturbance to a minimum in the case of both transient and permanent faults, and the fact that reclosing is from fully open position assures no impairment of insulation during the critical surge time that follows an interruption caused by repetitive lightning.

The short normal closing time as well as the reclosing time is maintained constant regardless of variation or loss of control voltage. Consequently when closing against fault there can be no slow drift-in of blades which might result in electromagnetic blow-back of blades far enough to open the a-auxiliary switch in the tripping circuit before the relays can operate. Simmering arcs are thereby avoided.

The interior construction also exhibits other advanced features that contribute to reliability of operation, as well as to ease of adjustment and low maintenance cost. Catalog 550 tells about them.

Since 1906

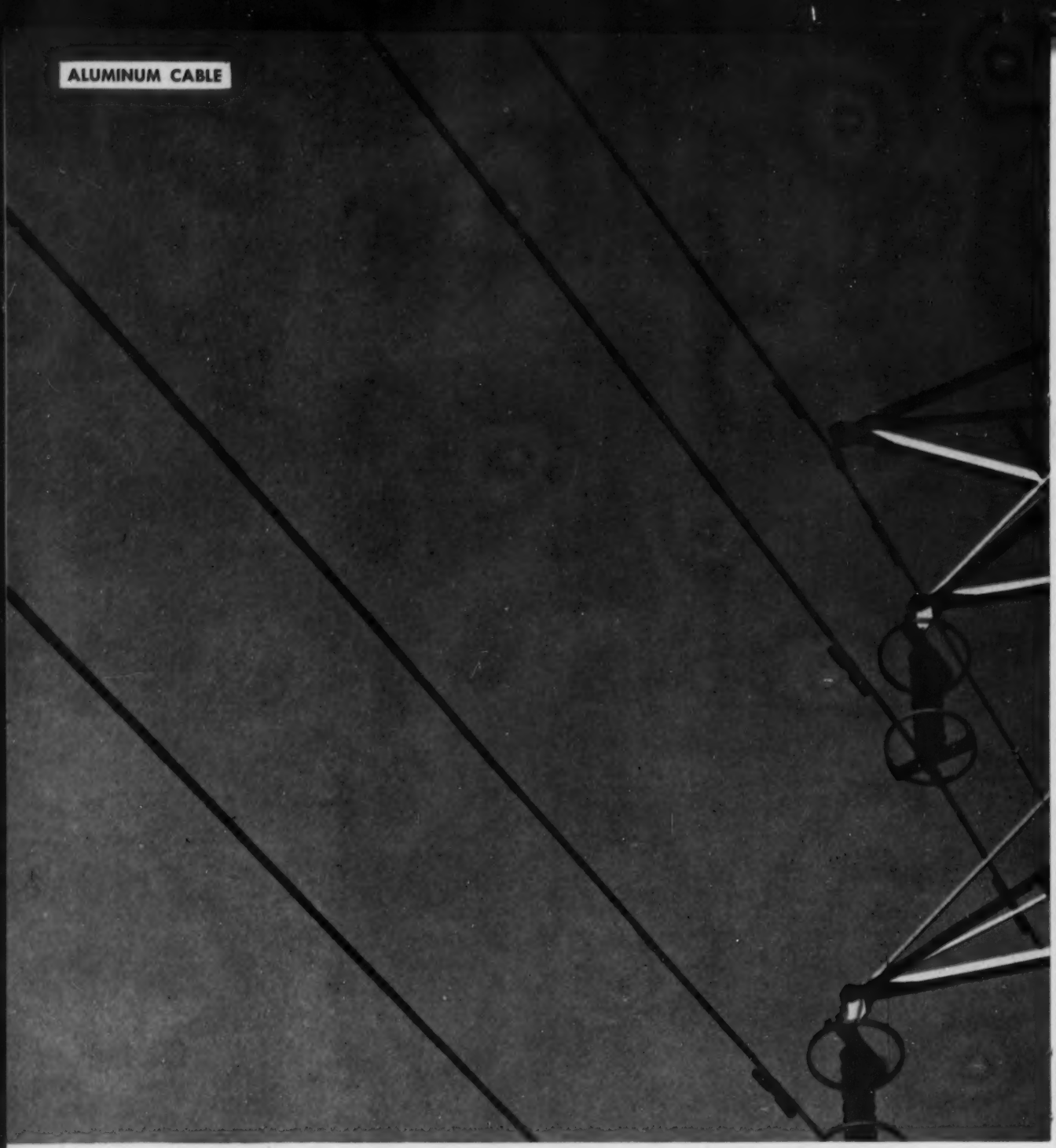
SALES OFFICES or AGENCIES in PRINCIPAL CITIES

PACIFIC ELECTRIC • MFG. CORPORATION •

SUBSIDIARY OF FEDERAL ELECTRIC PRODUCTS COMPANY

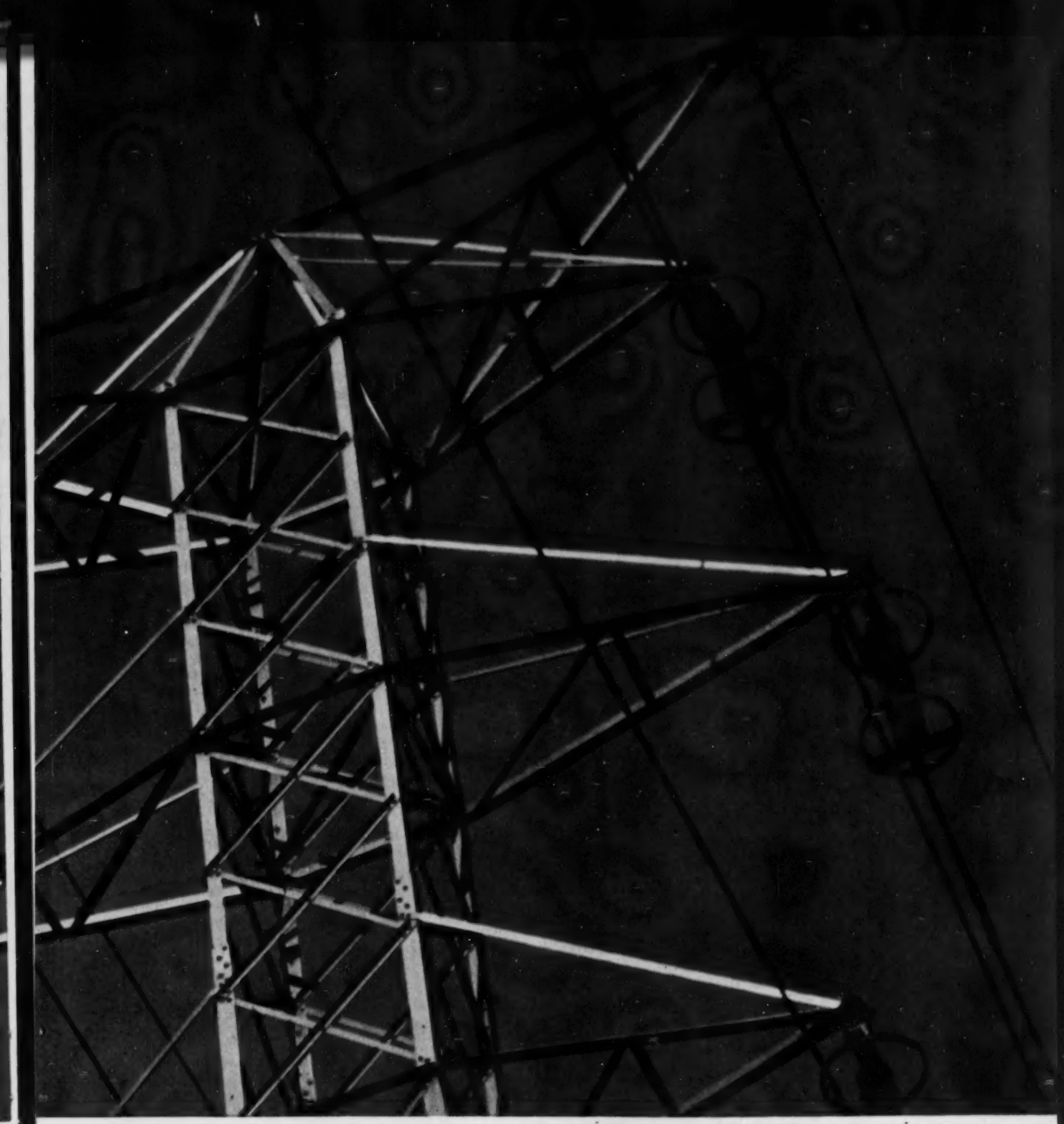
5815 THIRD STREET, SAN FRANCISCO 24, CALIFORNIA

OTHER FACTORIES: SANTA CLARA, CALIF., SCRANTON, PENNA.



Anaconda Recipe for ACSR...

Aluminum, Steel...AND CABLE EXPERIENCE



ANYONE can put Aluminum and Steel together!

But do you get what you want?

At Anaconda, we add still another prime essential —cable experience!

Not everyone has it. Cable experience takes *years* of "on the job" cable design, metallurgical research and manufacturing "know-how."

Such experience comes only from *living with* the problem.

We use this plus quality — cable experience — and the very latest equipment to make the finest cable.

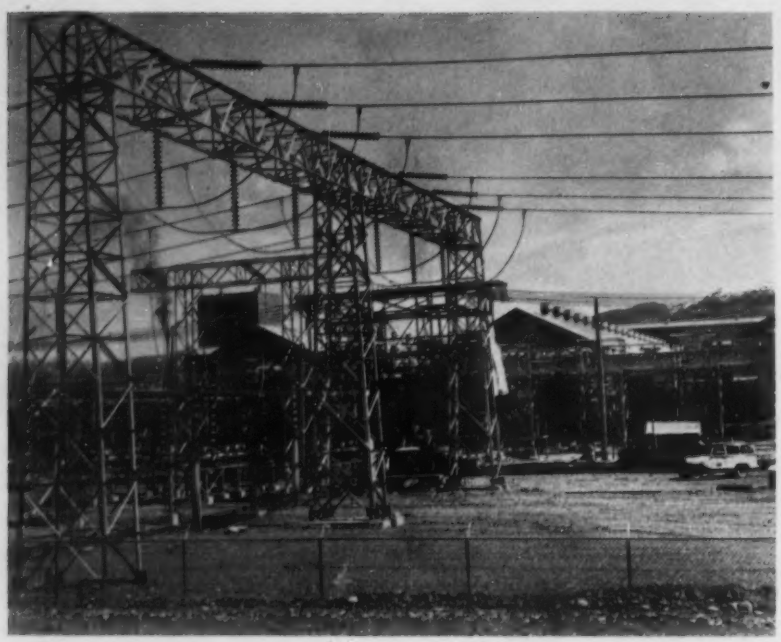
And we manufacture and stock aluminum in 5 strategically located mills to assure you of quick, sure delivery. *Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y.*

54890

ANACONDA®

Copper and Aluminum insulated conductors • Copper and Aluminum service cable • Wire and Cable accessories • ACSR transmission and distribution • Copper, Aluminum and Copperweld bare and weatherproof wire.

QUICK SERVICE FOR GROWING WEST — *Anaconda's integrated plant at Orange, California, assures western industry of quick, sure service on wire and cable for every kind of application. Contact Anaconda Sales Office at: Los Angeles, San Francisco, or Seattle.*



PRODUCTION OF ALUMINUM was to start about Aug. 1 at the new Kitimat plant of Aluminum Co. of Canada, 500 miles up the British Columbia Coast from Vancouver, B. C. First of three 106,000-kva generators in a power house excavated from rock was to have gone into operation July 15. Shown is Kitimat substation with 287,000-kv lines

WWP Plans on Noxon Rapids Will Be Known By Fall

Washington Water Power Co. expects to know by fall whether it will build an $86,000,000 concrete and earth-fill dam at Noxon Rapids on the Clark Fork River in northwestern Montana.

The earliest that construction could begin is fall of 1955, according to WWP President Kinsey M. Robinson, and Noxon would produce power three years later. Robinson said the company is considering a dam more than 200 ft high, which would back water to the Montana Power Co. plant at Thompson Falls.

Robinson said that if WWP builds Noxon Rapids, it will be the firm's biggest power producer. It will require relocating a portion of Northern Pacific railroad tracks and a state highway.

Joint Construction of Grays River Dam Studied by PUDs

Wahkiakum and Pacific County PUDs of southwest Washington are considering joint construction of a $5,000,000 dam on the Grays River near Cathlamet to generate 16,000 kw at 500-ft head.

Directors and managers of the two PUDs, meeting in Cathlamet, received a report on the dam from the engineering firm of Cornell, Howland, Hayes & Merryfield of Corvallis, Ore. The firm has been studying the project since 1951.

Construction of the project would be financed by the issuance of revenue bonds backed by an operating agency formed by the PUDs.

The project, requiring five years for construction, would involve a 24,000-ft tunnel from the dam to a power plant.

• **Receiving station G,** built at a cost of $3,270,000, was put into service by Los Angeles Department of Water & Power last month. Built on an eight-acre site, it has initial installed capacity of 120,000 kw. It is supplied with electricity at 138 kv from two other stations. Nine outgoing lines, operating at 34.5 kv, were placed in service in July. The number will be increased to 24 eventually.

• **Bonneville** Power Administration has taken over operation of the 20-mile Lookout Point-Oakridge 115-kv transmission line built by Lane County Electric Cooperative Inc. Final settlement on purchase price is to be negotiated under the purchase option deal Lane made with BPA prior to the co-op's construction of the $400,000 line last year.

CONSTRUCTION AT THE DALLES WILL MAINTAIN SCHEDULE

Work at The Dalles Dam on the Columbia is expected to keep on schedule despite failure of Congress to appropriate the full $45,000,000 requested by the Corps of Engineers.

Although only $36,000,000 were appropriated for the $348,372,000 project in the annual civil functions money bill, the accompanying report provides that funds be spent in such manner as to meet previously approved power deadlines for the first four units at The Dalles and to meet schedules at Chief Joseph Dam in Washington. The language in the order has been interpreted as taking precedence over the specific dollar allocation.

Col. Lewis H. Foote, North Pacific division engineer at Portland, has received an order issued by Maj. Gen. Samuel D. Sturgis Jr., chief of the corps, to proceed with original construction plans during the coming year. To keep on schedule, the corps may ask for a supplemental appropriation next January or may be able to transfer extra funds now earmarked for other projects, it is reported.

Meanwhile the new concrete batching plant, completed less than three weeks after footings were placed, is pouring out concrete for the power house at the rate of 2,500 cu yd per day as compared to 1,600 cu yd a day for the plant that collapsed May 28.

BPA Position on Serving Harvey Machine Clarified

Consruction of Harvey Machine Co.'s projected aluminum reduction mill at The Dalles, Ore., need not be delayed because of lack of funds in the current Bonneville budget, Interior Douglas McKay stated in reply to a recent query.

Released by BPA Administrator William A. Pearl, the McKay statement said that BPA recognizes its responsibility under the contract with the Harvey Machine Co. and when there is concrete evidence that a plant will be built, Interior will take the necessary steps to provide electric service.

• **Stanford Research Institute** has been named by AEC as one of the three National Industrial Information Depositories of unclassified information concerning developments in the field of atomic energy.

• **Benton County PUD** in Washington state has approved issuing $400,000 of additional bonds to cover a 2½-year expansion program, according to Manager Owen Hurd.

BEAT THE HEAT

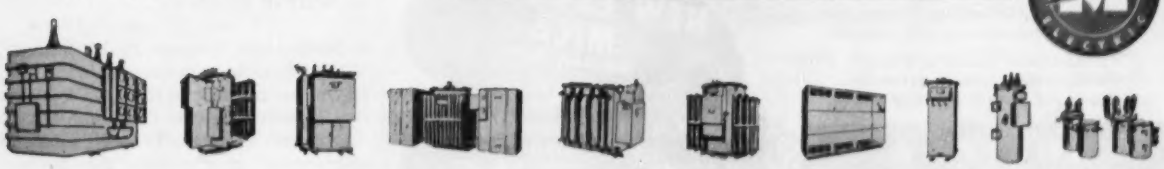
When sidewalks sizzle and the mercury mounts under a wilting summer sun, your transformer performance measures the narrow difference between economical operation plus dependable service, and costly outages and repairs. The steadily climbing cooling load thrusts new demands upon your transformers . . . internal temperatures build up terrifically and are compounded by solar heat. That is why summer is the season when you appreciate more than ever the plus performance you accept as the mark of Moloney.

For all Moloney Transformers are built with a margin of safety that helps get your system over the hump. It is designed in, built in, and is as integral a part of the unit as the familiar Moloney emblem . . . the mark that signifies years of building better transformers to meet the operating requirements of utilities in every kind of weather or condition.

MES4-10

MOLONEY ELECTRIC COMPANY

Power Transformers • Distribution Transformers • Step Voltage Regulators
Regulating Transformers • Load Ratio Control Transformers • Unit Substations
Network Transformers • Constant Current Transformers • Capacitors
Transformers For Electronics



SALES OFFICES IN ALL PRINCIPAL CITIES • FACTORIES AT ST. LOUIS 20, MO. AND TORONTO, ONT., CANADA

EARL S. Condon COMPANY

Engineering Representatives

- Burndy Engineering Co.
- Carma Manufacturing Co.
- Cole Electric Co.
- Lapp Insulator Co.
- Pacific Oerlikon Co.
- Preformed Line Products Co.
- Superior Switchboard & Devices Co.
- United States Rubber Co. Wire & Cable Division

3460 WILSHIRE BLVD. • LOS ANGELES 5, CALIF.
PHONE: DU 1-3951 • TWX: LA-795

STRENGTH, ENDURANCE that Meet the Test!

Crapo

Guy and Messenger Strand

IN THE FIELD as in laboratory tests . . . *Crapo* Galvanized Steel Strand proves itself capable of withstanding severe punishment. Steel's inherent strength and durability are combined with definite economies in every size and grade of *Crapo* Steel Strand. You'll find the heavy, ductile, tightly-bonded zinc coatings, applied by the famous *Crapo* Galvanizing Process, provide lasting protection against corrosion.

Contact your jobber of *Crapo* Galvanized Products or write direct for further information!

INDIANA
STEEL & WIRE COMPANY
MUNCIE, INDIANA

MICA?

—Whatever you want, we have it!

- **Y-26 HIGH HEAT MICA PLATE** Composite bonded, for heater appliances. Sheets or stampings.
- **SUPER-NEMCOITE** Composite bonded for equipment or machinery. Flexible or rigid sheet, tubing, or combined with Fiberglas.
- **MICA COMMUTATOR INSULATION** Rings, Segments, Sleeves to specifications.
- **MICA MOLDING PLATE** *(Thermoplastic)* Sheets, stampings or molded forms.
- **MICA SEGMENT PLATE** *(Thermoset)* Sheets, stampings or molded forms.
- **FLEXIBLE MICA PLATE** *(Cold Forming)* Sheets, or combined with Fiberglas, paper, cloth.
- **MICA TUBING** Any diameter and wall thickness, or sleeves and bushings.
- **MICA TAPE** Any thickness or width, combined with paper, silk, rayon, cellophane, Fiberglas.

Your Complete Source for Mica!

NEW ENGLAND MICA
Waltham, Mass.

Standard Forms in Stock Ready To Ship From

INSULATION and WIRES
INCORPORATED

LOS ANGELES 2240 E. Washington Blvd.
PORTLAND, ORE. 1702 N. E. Sandy Blvd.
SAN FRANCISCO 1077 Howard St.
ST. LOUIS And 12 other cities

CONSTRUCTION SCHEDULES ARE STEPPED UP ON STEAM PLANT

Stepping up construction schedules for its Humboldt Bay steam plant south of Eureka, Calif., Pacific Gas and Electric Co. will start work on the main buildings soon, Norman R. Sutherland, vice-president and general manager, has announced.

The plant will have one 50,000-kw generator and is expected to be in operation during the autumn of 1956. Total investment will be about $8,500,000.

Although power will be transmitted at 60 kv, facilities are planned to accommodate 110-kv transmission if it becomes necessary.

Construction will be by Bechtel Corp., under supervision of PG and E engineers.

Highgrove Steam Plant to Have Fourth Unit in 1955

California Electric Power Co. has started construction of a fourth 40,000-kw unit at its Highgrove steam plant. The $5,393,000 project is scheduled for completion in November 1955.

With the exception of the operator's control and switchgear room, all components are out of doors. The plant has only two operating levels, at grade and at 14 ft.

Fluor Corp., which constructed the first three units, will build No. 4. Total investment at Highgrove plant will be some $20,000,000.

• **Hardrock miners** have completed the first stage of B. C. Power Commission's $2,000,000 4,200-kw hydro development on the Spillimacheen River in the Upper Columbia Valley of British Columbia. The 7-ft-diameter tunnel will carry water from a diversion dam to a penstock, which will drop about 165 ft to a power house being built this summer.

• **Application** for a preliminary permit for a proposed hydro development on the South Fork of the Stillaguamish River in Snohomish County, Wash., was filed with FPC by Ronald D. Taft of Granite Falls, Wash. The project would consist of four separate developments having a total installed capacity of 85,500 kw.

• **Snohomish County** PUD, Everett, Wash., has filed application with FPC for a preliminary permit for a hydro development on the Sultan River in Snohomish County. To be located 23 miles east of Everett, the project would have installed capacity of 125,000 kw at two power houses.

CONTRACTS AWARDED FOR CONSTRUCTION IN WEST

Westinghouse Electric Corp. has been awarded a $2,116,252 contract for installation of two additional generators at Chief Joseph Dam on the Columbia River upstream from Wenatchee, Wash., according to an announcement by the Seattle District, Corps of Engineers. Westinghouse previously had contracts for eight generators at Chief Joseph.

• **Contracts** for another segment of the 176-mile transmission line to connect McNary Dam with Vancouver and Portland load centers were awarded June 18 by Bonneville Power Administration. The new contracts cover the Wishram-Vancouver segment. The portion from McNary Dam to Wishram is already under construction. W. L. Ridge Construction Co., Spokane, will construct half of the new segment, starting at Wishram. The other half, ending at Vancouver, will be constructed by Parker-Schram Co., Portland.

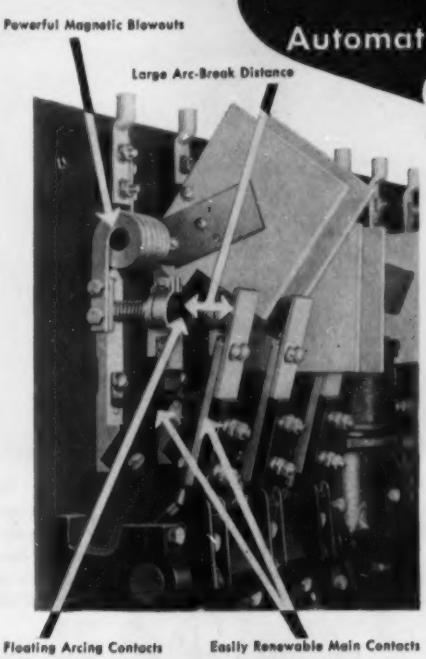
• **American Elin Corp.** submitted an apparent low bid of $1,174,745 to the Seattle Board of Public Works for furnishing and installing a generator in Ross Dam. It promised installation in 730 days.

• **Bids** will be called for construction of a modern B. C. Power Commission office building in Kamloops, British Columbia, after the architects, Allen C. Smith and Associates, Vancouver, have prepared final specifications, it has been announced by T. H. Crosby, chairman of the government-owned utility. Building will have two stories and will be 50x60 ft with full basement. It is hoped to have it completed and ready for occupancy late this year.

• **Lincoln Electric Cooperative** of Davenport, Wash., plans service to 100 new customers with a $175,000 loan approved by the Rural Electrification Administration. Donald A. Lightner, manager of the co-op, said the new customers will be added during a two-year expansion program. The co-op will pay 2% interest and have 35 years to repay the loan.

• **Whatcom County PUD,** Bellingham, Wash., sold a $650,000 issue of utility revenue bonds to First Washington Corp. of Seattle at an effective interest rate of 2.7756%. Four other bids ranged up to 3.4863%. Proceeds will be used to build facilities to serve a new General Petroleum Corp. refinery at Ferndale.

11 Reasons Why ASCO® means Adequate Automatic Transfer Switches



Construction Details
"ASCO Engineered" Automatic Transfer Switch With Circuit Breaker Construction. One Arc Chute Removed.

ASCO Transfer Switches

. . . transfer the connected load from normal to emergency supply when normal power fails, or normal voltage is substantially reduced. Upon restoration of normal, the switch will retransfer the load.

ASCO® Switches are:

1. Specifically designed for use in the secondary feeder circuit. Accordingly, these switches incorporate features not required in devices such as motor starters designed for branch circuits. These features are listed below.

2. Designed to withstand inrush currents twenty times normal full load rating. This is especially important for incandescent lamp loads.

3. Rated for continuous 24 hour duty for all classes of load.

4. Capable of rapid transfer — 2 to 5 cycles on small units and 5 to 9 cycles on large. Quick interruption helps prevent flash-over.

5. Built with high thermal capacity and ability to withstand electromagnetic effects.

6. Equipped with silver to silver contact surfaces.

7. Mechanically locked in either position by powerful linkages — no delicate hooks or latches are used.

8. Inherently double throw. No "Off" position possible.

9. Quiet in operation and simple to inspect and maintain.

10. Operated from the source to which the load is to be transferred.

11. Supplied, when specified, with: Full relay protection — to provide for transfer when voltage falls below a fixed percentage of normal; Lockout Relays — to prevent transfer until voltage and frequency are normal; Signal Contacts — used with light or bell to provide an alarm when normal fails; Built-in Time Delay — to avoid operation on momentary power dips and outages.

ASCO Electro-Magnetic CONTROLS

WRITE FOR PUBLICATION 502 — 8 features to look for in selecting Automatic Transfer Switches.

ASCO designs and manufactures a complete line of Solenoid Valves and Electromagnetic Controls including Remote Control Switches, Contactors, Relay and complete Control Panels.

Automatic Switch Co.
385 S. LAKESIDE AVENUE · ORANGE, NEW JERSEY
Pacific Factory Branch: 923 East Third St., Los Angeles, California — Tel. Michigan 0931
Representatives in San Francisco, Seattle, Albuquerque, Denver, El Paso

CONSTRUCTION of power house and intake structure are well underway at Box Canyon Dam, $16,000,000 project of Pend Oreille PUD in northeastern Washington. Alleged failure of Pacific-General-Shea to complete work on schedule has led to termination of contract and awarding of a new contract to Morrison-Knudsen Co. for completion of the dam. Claims have been filed by the PUD and Pacific-General-Shea on termination of the contract. The district asks $4,113,000; the contractor, $3,000,000

Seattle Residents To Have Choice of Light Poles

Residents of Seattle will be able to choose between wooden or steel light poles in various districts of the city, if plans of City Light and the city engineering department are accepted by the city council.

The city is considering a policy that calls for illuminating all usable streets, a total of 1,020 miles, within the next five years, at a cost of more than $4,000,000. The project would be financed principally with a bond issue to be voted upon this fall.

In general, the improved residential street lights would be on wood to save expense but residents in districts desiring steel could get it by paying the added cost, probably through formation of a Local Improvement District. Costs are estimated at $168 for installing a mercury-vapor lamp on an existing wood pole, $224 on a new wood pole and $560 on a new steel pole with underground wiring.

• **Two small power companies** in the extreme northwest corner of Washington State, near the Pacific Ocean, have received a $150,000 loan from the Small Business Administration in Washington, D. C., to build a transmission line that will enable them to buy power from the Bonneville Power Administration. They now use diesel power, according to Clifford Cowling of Port Angeles, president of both companies. The line will connect with a Clallam County PUD line at Sappho and extend to Clallam Bay, served by the Clallam Bay Light & Power Co., and then to Neah Bay, served by the Neah Bay Light & Power Co. Bonneville power will come over the PUD line.

Faster-Growing Trees May Reduce Power Station Noise

Reforestation is being tried by B. C. Electric Co. in an effort to reduce noise from a power station in the fashionable Shaughnessy subdivision.

Trees planted around the power unit will be torn up and new ones planted. Company Vice-president Tom Ingledow told the city council that the present forest screen hasn't developed fast enough and that faster-growing trees will be used.

Aim is to shield the outdoor unit and to provide a green curtain to keep operational noises from disturbing nearby residents.

Homeowners complained to city council last February, claiming the noise depreciated property values and blocked home sales.

Ingledow reported recently that efforts to solve the problem through installation of modern, noiseless equipment have been made and are continuing.

He added that similar techniques would be used at another substation where noise is a problem.

ELECTRICAL PROGRAM COVERED IN ROUND-TABLE SESSIONS

Electrical program at the Western Plant Maintenance Conference in connection with the show held at the Pan Pacific Auditorium, Los Angeles, July 13-15, by sponsors Clapp & Poliak Inc., was covered in a specialized round-table session. There were eight of these round tables.

Bryan Hill, plant engineer, Cannon Electric Co., Los Angeles, spoke on maintenance of electrical equipment. L. A. Beck, manager, Southwest Pacific District service shop, General Electric, Los Angeles, underlined productive maintenance as "creating added output without adding any machines." J. Roy Jones, regional engineer, Westinghouse Lamp Division, Los Angeles, spoke on lamp and fixture maintenance and group replacement. Philmore Belsky, switchgear product engineer, Westinghouse Electric Corp., spoke on "Maintenance of Electrical Distribution Apparatus."

The sponsors declared that response made it probable that a similar conference and show will become an annual event.

• **Latest developments** in use of electricity in that industry will be reported at the first Electrical Conference of the Petroleum Industry, Sept. 27-29, in Tulsa, Okla. The three-day technical conference is sponsored by the Petroleum Industry Committee of the American Institute of Electrical Engineers, with the Tulsa Section acting as host. About 1,400 engineers in the petroleum field have been invited to attend.

• **A group headed by the First Boston** Corp. made the best offer for $6,000,000 Pasadena, Calif.. electric works revenue bonds due June 1, 1955 to 1974. Proceeds from the bonds will finance extensions and improvements of the city's electric facilities, including construction of a steam generating plant, substation and transmission lines. Net interest cost on the bonds was figured at 2.07733% after a bid of 100.113 for 2s and 2¼s. Subject to award, the bonds are being reoffered at prices to yield from .85% to 2.40%.

• **Colorado Association** of REA Cooperatives has predicted Colorado farmers will more than double their use of electricity in 10 years and will quadruple their power consumption by 1975. H. Vance Austin, association manager, said Colorado farmers now consume 264,000,000 kwh annually. By 1963 the total will be near 650,000,000 and will top one billion by 1975, Austin forecast.

Through heart of downtown San Francisco . . .

P. G. and E. Buries New 12-KV Tie-Line 15 Feet Under Sacramento Street

To provide additional power supply for Station "J," located at Sacramento and Liedesdorf Streets, near the center of San Francisco's financial district, the Pacific Gas and Electric Co. is installing a new 12-kv tie-line bewteen "J" and the big Mission Sub-Station at 8th and Mission streets. A new 8-way encased duct system has been constructed, using 5" Soapstone OCT-O-DUCT laid in tiers 2-wide and 4-high. Two 750 MCM gas-filled cables will be pulled in for this new circuit.

Feature of the duct system is the run from Stockton Street down Sacramento to Liedesdorf which was laid in trenches 15 feet below the street surface! Open trench about 3 feet wide was used for most of the run, but night-crews tunneled under busy intersections at Kearny and at Montgomery Streets to eliminate traffic interference.

The unusual depth was required for this stretch of duct in order to avoid the many other underground services present in the area. It is one of the deepest underground runs ever constructed under San Francisco streets. P. G. and E. has used many thousands of feet of Soapstone conduit in its San Francisco underground system. The Mission -"J" tie-line is the first long run of new OCT-O-DUCT laid by this utility.

New Soapstone OCT-O-DUCT has been designed for easy, fast handling in the field. Its low first cost is only the beginning of the economies that Western electric and telephone utilities have been able to effect by using it. OCT-O-DUCT is just the right length for fast erection, even in the deepest and narrowest trenches. Simple collar-type couplings need no field tooling. The electrical, chemical and strength characteristics of this smooth conduit exceed utility and Government specifications.

New Bulletin 54-A tells all about Soapstone OCT-O-DUCT. Also available is a manual of field practices, "How to Install Soapstone OCT-O-DUCT." Write for your copy of either or both of these publications.

SOAPSTONE DUCT COMPANY
110 Linfield Drive, Menlo Park, California
Distributed in the West By
MAYDWELL & HARTZELL, INC.
San Francisco · Los Angeles · Phoenix
Portland · Seattle · Spokane

NEW SACRAMENTO SCHEDULES BRING RATE REDUCTION

An electric rate reduction amounting to $524,400 annually has been voted by directors of Sacramento Municipal Utility District and is effective Oct. I.

According to Royal Miller, president of the SMUD board, the cut was made possible by savings in power costs resulting from purchase of Central Valley power from USBR. The board estimates these savings at about $700,000 for the first year of operation.

A paper transaction completed the changeover that made the SMUD a direct customer of CVP at midnight June 30. Meter readings were all that were needed for the transfer. Pacific Gas and Electric Co., which has been serving the district, will continue to provide wheeling facilities until SMUD can complete its own facilities to tie in with CVP lines.

SMUD plans to spend $6,500,000 in the next three years to link its operations with government power lines.

New Eugene Schedule Drops Penalty Rate for Large Users

Eugene Water & Electric Board has put into effect a new electric rate schedule based on a demand meter method of figuring charges. The new rates will affect only about 1,250 customers—mainly those who formerly paid a penalty rate because they use large amounts of electricity for heating or appliances. They will get reductions under the new schedule.

The board has ordered 2,300 devices to be placed on meter to implement the new system. The first batch will be installed on commercial and industrial meters, and more will be ordered for residential meters. The change-over is expected to be completed in a year.

Amended Tacoma Rate Aids Space Heater Users

Tacoma City Council has approved an amended City Light rate schedule to meet protests made against the former schedule by appliance dealers and residents using space heaters.

The new residential rate provides that all electric power used over 430 kwh will cost an additional mill, or 6 mills a kwh. In addition, the average monthly consumption of the consumer will be determined from the four monthly billing periods immediately preceding Oct. 15 of each year, with the consumer to be charged 2 mills more a kwh for all power used over 1.75 times the average monthly consumption established.

The commercial lighting and incidental power rate for stores and similar establishments also was increased.

The amended rate schedule has provision for an adjustment of individual consumption schedules for additional load caused by the purchase of a new appliance.

FPC Upholds Power Company In Rate Increase Protest

A supplemental rate schedule, increasing service by Pacific Gas and Electric Co. to Sierra Pacific Power Co., Reno, 28.4% annually was declared "not unlawful" by FPC. PG and E has been collecting the increased rates, subject to refund, since last September.

The commission said the increased rate will not provide more than PG and E's cost of rendering the service, including return at the stipulated rate of 5½% on investment, and that based on the test year 1952 will produce revenue to yield a return of only 4.75%.

• **An increase** in rates for electricity sold to residents of Lanai has been put into effect by the Hawaiian Pineapple Co. to reduce losses on its operations. The increase is the first in residential rates since 1938 and the first in commercial rates since 1946.

• **Southern Colorado Power Co.** of Pueblo asked Colorado Public Utilities Commission July 19 for authority to issue 30,000 shares of $50 par value preferred stock with a dividend rate not to exceed 4.75%. Proceeds would be used in part for construction of a new 16,500-kw generating plant at Canon City. It is estimated to cost $3,500,000 and is due for completion late next year. The utility said it planned to sell stock to a group of underwriters headed by Stone & Webster Securities Corp.

• **Valuations** of all three private power companies operating in Washintgon have been increased, for tax purposes, by the state tax commission. Largest increase was that of Washington Water Power, from $39,000,000 to $50,000,000. Properties of Pacific Power & Light Co. were valued at $45,000,000, an increase of $10,000,000, and those of Puget Sound Power & Light Co. at $63,000,000, up $3,000,000.

PROPOSED BOND ISSUE WOULD FINANCE LOS ANGELES UNITS

Los Angeles Department of Water & Power has proposed a $48,000,000 bond issue to be included in the city budget plans for construction of water and electrical systems. The issue would complete the $79,583,000 provision for capital expenditures in the budget for the coming fiscal year, beginning July 1.

Largest project under construction for the city's power system is a $75,000,000 steam plant started in September 1951. Of the four generating units comprising the plant, one is expected to be completed by fall. The others should be ready for use by 1955.

BPA Makes Record Payment to United States Treasury

Bonneville Power Administration will make a record payment of $50,877,210 to the U. S. treasury from power receipts for the fiscal year ending June 30. Last year's power receipts totaled $34,600,000.

Fund transfers this year include for the first time payments on the Hungry Horse project, $5,087,210; McNary project, $4,560,000; Detroit-Big Cliff project, $1,590,000; Albeni Falls project, $475,000. Payment on the Columbia basin project totals $12,532,000, Bonneville Dam project, $3,350,000; BPA transmission system and operations $23,300,000.

Payments cover all obligations allocated to power, including capital investment in federal dams and transmission systems, operating expenses and interest.

• **Public Service Co. of Colorado,** the state's largest taxpayer, received the biggest boost recently when the Colorado Tax Commission fixed property assessments of Colorado utility companies at $310,802,290, up $3,500,000 over 1953. Lower assessments were ordered for railroads and the Denver Tramway Corp., but the electric utility's assessment was fixed at $68,450,320 compared with last year's $64,535,280. Commission officials said the higher assessment for Public Service Co. reflected increases in plants and equipment. PSC paid $2,609,930 in property taxes last year.

• **Clark County, Wash., PUD** has paid $66,732 to the Washington tax commission to bring total payments for the year in lieu of taxes to $221,888. The payments represent a 2% of gross revenue and puts the PUD payments since 1939 to $1,018,044.

LOOK AT DAY-BRITE

VIZ-AID®

Standard of the industry. One of the most imitated commercial fixtures on the market. In Rapid-Start, 2- and 4-lamp units.

LENOX®

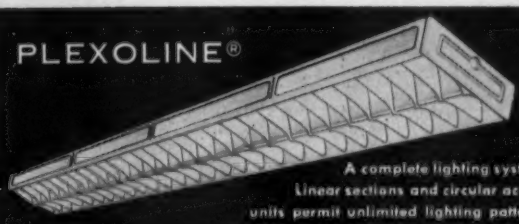
Highest quality commercial fixture available to fit the modest lighting budget. Low in cost, high in appearance and performance.

LUVEX®

All metal Slimline and Rapid-Start fluorescent. One-piece, 8-foot section. Hot bonded super-white finish.

FEEL THE DIFFERENCE

PLEXOLINE®



A complete lighting system. Linear sections and circular accent units permit unlimited lighting patterns including curves, angles, abstract designs. Slimline and Rapid-Start fluorescent.

MOBILEX®

Flexible recessed lighting system designed for use with new, low-cost grid-type and spline suspended ceilings. Moulded plastic, glass and louvered shielding.

TROFFER SERIES

Four interchangeable shielding elements fit basic channel. Both flange and snap-in types. In Slimline and Rapid-Start fluorescent.

...BEFORE YOU BUY

This is just a glimpse of the nation's leading line of lighting fixtures. Whatever the lighting job, there's a quality Day-Brite fixture to do it—not just as well, but better!

Best way to have the full picture of the Day-Brite line is to have an up-to-date catalog. If you don't already have one, write to the address below.

DAY-BRITE LIGHTING, INC., 5412 Bulwer Ave., St. Louis 7, Mo. In Canada: Amalgamated Electric Corp., Ltd., Toronto 6, Ontario.

DAY-BRITE Lighting Fixtures

459

PARA-LOUVER® TROFFERS

Alzak aluminum parabolic unit with sensational new PARA-LOUVERS —reduces lengthwise brightness up to 50%.

CFI DAY-LINE®

Rugged industrial unit, produces new comfort for industry with 10% uplighting through die-embossed apertures in one-piece reflector.

WIDELY ADAPTABLE

Fluorescent and Slimline Units

For cove, cornice, or valance lighting . . . or supplementary lighting on shelves, counters and display cases, you'll find Wiremold Units the most useful you've ever worked with. Easily and quickly installed . . . small cross section. Write for full information.

WIREMOLD
builds better business for you
. . . at a profit!

TRIP-PROOF overfloor power lines with **PANCAKE**

Carries power or communication lines overfloor to the point of use . . . *safely!* Strong as a bridge, too — *both* cover and base are heavy galvanized steel. Two interconnecting sizes meet all requirements. Write today for the PANCAKE booklet.

WIREMOLD products are backed by a firm guarantee. See page 7 of Wiremold Catalog No. 19.

The WIREMOLD Company
HARTFORD 10, CONN.

TACOMA TELLS PROJECT COST AS COMPARED WITH '50, '51

Cost of a proposed hydroelectric project on the Cowlitz River in southwest Washington is estimated at $145,630,000 in a report submitted to the Tacoma, Wash., Public Utilities Board by Dean Barline, utilities director.

The same project would have cost $137,000,000 in 1950 and $141,000,000 in 1951, the report showed.

Barline has been authorized by the board to investigate the possibility that the federal government might allocate some funds to the project because of flood control benefits.

• **A blanket salary increase** of 3% has been approved for the 10,325 employees of Los Angeles Department of Water & Power, effective July 1. The action was taken by the Water & Power Commission despite Mayor Norris Poulson's objection that department employees receive higher salaries than those paid other city employees and, in some instances, higher than those of employees of other utilities. Basis for overriding the objection was said to be a survey of private utilities in the area, showing wage increases of between 3 and 3½% during the past year.

• **Wage increase** averaging 3% per hour were granted to hourly rated field and shop employees as well as office personnel of the Salt River Power District and the Salt River Valley Water Users' Assn. The increases were based on a job evaluation program and were approved after a study of area wages and discussions with project employees.

• **G-E employees** at Hanford, Wash., will receive wage increases averaging approximately $2.68 per week, with a $1.60 per week minimum, achieved by raising the former 12% "adder factor" to 15%. Other new benefits are pay for alternate holiday when a "paid holiday" falls on Saturday and liberalization of the vacation plan.

• **Electrical workers** in Alaska have been granted a wage increase of 32½c an hour by the joint Labor-Management Council on Industrial Relations, bringing the scale at Anchorage and Fairbanks to $4.25 an hour.

• **A poll at a citizens' meeting** in Richland, Wash., indicated a sentiment for municipal operation of the community's electrical system when the town becomes privately owned and operated. Mrs. Pat Merrill, councilwoman, said citizens voted four to one against operation of the system by the Benton County Public Utility District.

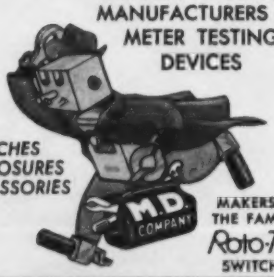
EXTRA Holding Power
QUICKLY Installed
TOUGH For long life

EVERSTICK ANCHORS

For new construction and maintenance —Everstick Anchors speed up work and provide dependable anchorage on all types of jobs. Made of resilient, rust resistant malleable iron. The toughest anchors made. Write for bulletin.

EVERSTICK ANCHOR CO.
FAIRFIELD, IOWA

LARGEST EXCLUSIVE MANUFACTURERS OF METER TESTING DEVICES



SWITCHES
ENCLOSURES
ACCESSORIES

MAKERS OF THE FAMOUS Roto-Test SWITCHES

METER DEVICES
COMPANY • CANTON, OHIO

TRANSFORMERS

We manufacture Power, Distribution, Dry Types and specials of all kinds.

Also rewinding, redesign, general service and repair.

EXPERIENCED • DEPENDABLE
HILL TRANSFORMER COMPANY
1030 Washington St., San Carlos, California

NEWS ABOUT PEOPLE

• **R. H. Ashworth,** vice-president of Utah Power & Light Co., retired July 1 after 41 years with the utility. Joining the firm in 1913 after coming west from his native Minnesota to work in Utah's Carbon County coal fields, Ashworth's first post was in the statistical department. He later became assistant to the general superintendent and later to the general manager, S. R. Inch. He then moved to the post of assistant to Commercial Manager P. N. Parry and became commercial manager himself soon afterward. In 1947 Ashworth was elected vice-president in charge of business development and division operations.

• **Olin H. Ririe** has been named assistant to the president of Utah Power & Light Co. He had been serving as industrial relations manager at the company's general office in Salt Lake City. Joining the utility in 1927, Ririe was UP&L's Ogden division manager from 1947 to 1953. Earlier he had been manager of the Southern division, from 1941 until 1947. His prior service was as assistant personnel manager and in the accounting and commercial departments.

• **Howard W. Flye** retired July 1 as San Francisco district sales manager for Aluminum Co. of America, following 41 years of service with the organization. He had been in the Pittsburgh, Toronto, New York and Philadelphia offices before he was transferred to San Francisco in August 1919. He is a graduate of Yale University; was captain in the Army during World War I. **Robert A. Rohn** succeeds Flye as Alcoa's San Francisco district sales manager. He joined the company in 1930 and was in the Cleveland sales office when he moved to San Francisco as assistant sales manager a few months ago.

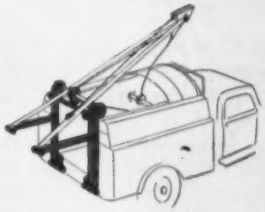
• **William R. Sears** has been appointed Pacific Coast manager of promotion and publicity for Sylvania Electric Products Inc. He joined Sylvania in 1952 at Emeryville, Calif., as a field representative in the Lighting Division. Previously he had worked for 10 years as a newspaperman in New Haven, Chicago and New York.

• Shermer L. Sibley has been made assistant to the vice-president and general manager of Pacific Gas and Electric Co.

Fold Up Your Derrick from Inside The Cab!

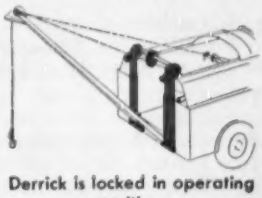
U. S. Patent No. 2,336,965

with the Tel-E-Lect STORAGE KIT



Derrick raised by simply engaging the winch.

Vertical position—winch rotation reversed.



Derrick is locked in operating position.

★ Saves Space
★ Saves Time
★ Saves Money

You know what a tough job it is to assemble an "A" frame derrick—and to put it away after use. Now Tel-E-Lect has a simple solution with a real dollar saving in time on the job—a saving of space on your trucks—and a saving in many hours of back-breaking and hazardous work for your men.

The patented Storage Kit fits any standard utility truck body and "A" frame derrick and it can be quickly bolted on the back of your truck by your local mechanic. The derrick will go up or down in a minute or less, entirely controlled by the man in the truck cab. Working with a double drum winch, you get live boom operation—or easily adjustable derrick elevation with a single drum winch.

The cost is only a fraction of other, more intricate derrick storing systems—and there's no rebuilding of your present equipment!

So, while you're thinking about it, drop a line to Tel-E-Lect for diagram and price. It's sensational!

Earth Boring Equipment for All Types of Trucks

Distributed by:
AM. EQUIPMENT & BODY CO., Los Angeles 33
COLE COMM. CO., Seattle, Wash.
TRUCK EQUIP. CO., Denver, Colo.
UTILITY BODY CO., Oakland 7

Tel-E-Lect PRODUCTS, INC.

10,001 Minnetonka Blvd.
Minneapolis 16, Minn.

• **Retirement** of **Harry J. Billica** as district manager and appointment of **A. B. Leach** to succeed him has been announced by Copperweld Steel Co., Wire and Cable Division. With headquarters in San Francisco the district embraces the states of California, Arizona, Nevada and Utah. Associated with Copperweld for 16 years, Leach moves to San Francisco from Chicago. Billica became Pacific district manager in 1945, having joined Copperweld in 1943. He was with Washington Water Power Co. for 14 years and later went with Graybar. From 1934 to 1940 he was with Indiana Steel & Wire Co. and just before Pearl Harbor he went to Washington, D. C., with WPB.

• **Franklin H. Drew** has been appointed to the newly created position of Pacific Coast service manager for Westinghouse Electric Corp. His responsibilities embrace service on both steam and electric apparatus. His headquarters will be at San Francisco. He had been steam superintendent for the region since 1946. **J. N. Jones,** regional electrical superintendent in San Francisco since 1949, has been appointed engineering and service manager for the Salt Lake City office, replacing **Edward H. Hulse,** who has been assigned to East Pittsburgh.

• **Dr. Royal W. Sorensen,** professor of electrical engineering emeritus of the California Institute of Technology, has been elected to honorary membership in the AIEE. He has been a fellow of the AIEE since 1919 and was its national president, 1940-41. His retirement after 42 years at Caltech has not stopped his technical activity. He is currently directing a program of high-current research and development work on the campus, using a mobile test station that he designed.

• **T. H. Todd,** formerly with Graybar in the West, has been appointed district operating manager for that company at Cincinnati. He joined the company at Seattle in 1940 and served there and at Spokane until 1952, when he joined the vice-president's staff at the general department in New York.

• **George B. Mackey** has been made Pacific Coast regional manager for the Westinghouse Lamp Division, succeeding **Walter H. Thompson,** appointed assistant general sales manager. Both men will be headquartered in the division's San Francisco office.

• **S. B. Chase Jr.,** Great Falls attorney and legal counsel for Montana Power Co. since 1924, has been elected vice-president and counsel. He has been a director since May 1953.

Starr

• **Sol E. Schultz,** chief engineer for Bonneville Power Administration since 1940, has resigned effective July 1. He joined BPA as consulting engineer in 1939, shortly after construction was started on the Bonneville grid. He was presented with the Milton H. Maquire award for an outstanding record in engineering skill and achievement by the Northwest Public Power Assn. in 1950.

• **Eugene C. Starr,** professor of electrical engineering, Oregon State College, has been appointed chief engineer for Bonneville Power Administration to succeed **Sol E. Schultz.** Since 1939 Starr has served as consultant engineer for BPA. He received his electrical engineering degree from OSC in 1938 and has taught at the college since 1927. During World War II he served in the Office of Scientific Research and Development, being assigned to aircraft radio research. He is currently a consultant to the reactor development division of the Atomic Energy Commission.

• **John F. Richardson** Jr., director of the division of administrative management for BPA, has left to join the Ford Foundation for a special assignment in Burma. He joined the agency in 1944.

• **Nelson C. Hazeltine,** director of information for BPA, left the agency June 9 and plans to enter the advertising business.

• **Sam Moment,** BPA economist, was released July 1, when his job was discontinued by budget curtailment program.

• **Ulysses G. Plummer** Jr., Portland attorney, has been named to the staff of the general counsel's office of the Bonneville Power Administration.

• **John W. Mueller,** chairman of the Sacramento, Calif., section, American Institute of Electrical Engineers, has been assigned by the Foreign Operations Administration as an electrical engineer on the staff of the United States Operations Mission in Turkey as a member of the reclamation advisory team. Mueller for the last eight years has been on the Bureau of Reclamation's staff in Region II, Sacramento.

• **Harry A. Morgan,** area sales manager for Westinghouse, was elected chairman of the Denver Section of American Institute of Electrical Engineers. **Arlie E. Paige,** chairman of University of Denver electrical engineering department, was elected vice-chairman. **Max Kight,** chief of the electrical branch, Bureau of Reclamation, was elected secretary-treasurer.

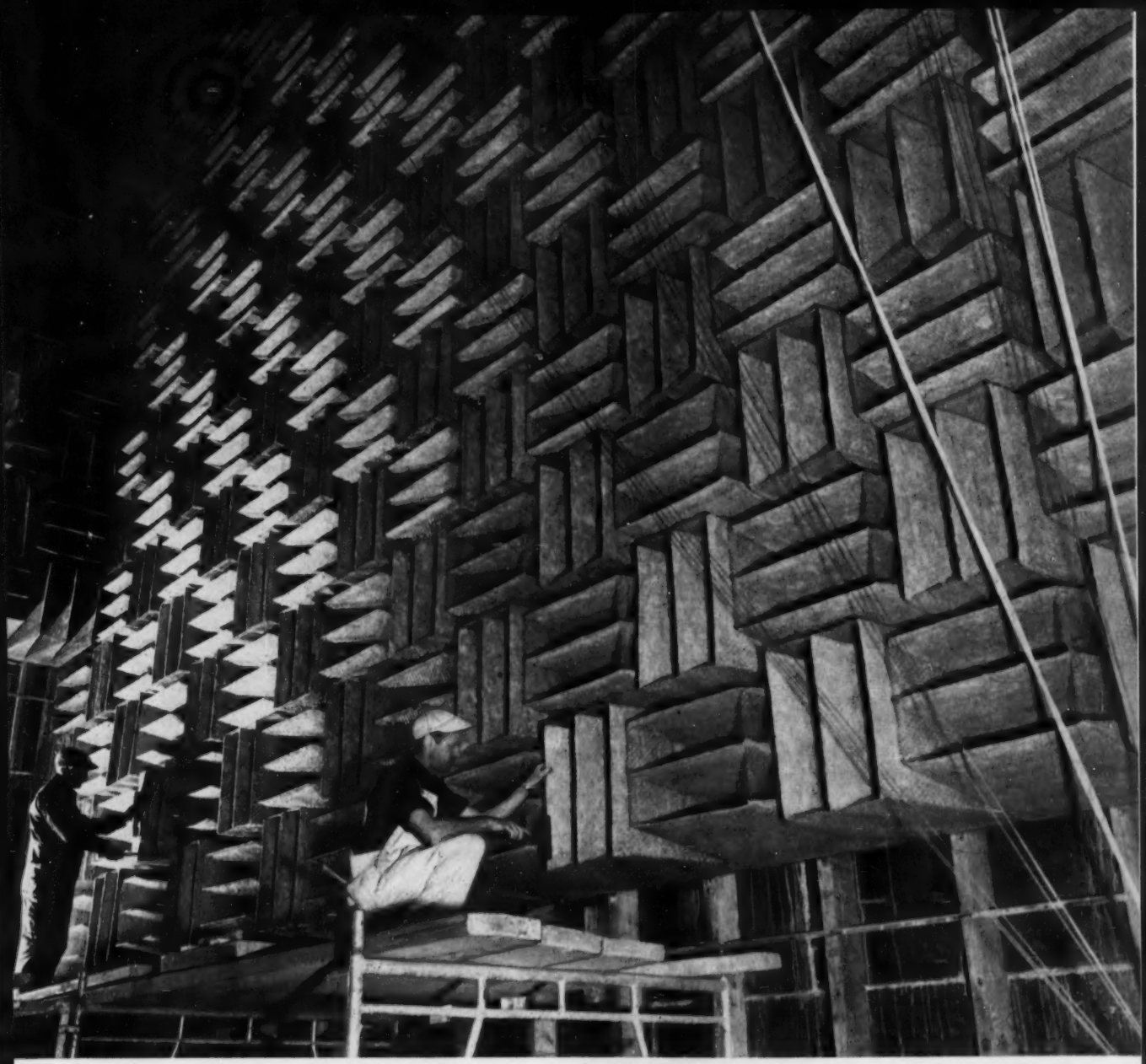
• **Henry B. Sargent,** president of Arizona Public Service, was elected to a second term as vice-chairman of the Steering Committee of the Electric Companies Public Information Program at its meeting in Atlantic City recently. **John E. Loiseau,** president, Public Service of Colorado, is on the executive committee and is chairman of the finance committee, which includes **Kinsey M. Robinson,** Washington Water Power Co., as a member.

• **Recent promotions** in the Salt River Power District: **F. E. Ealy** is now in charge of steam and hydro generation, dispatching, electrical maintenance, electric shop and power office. **Loy Potter** is superintendent of transmission and distribution; **Edward C. Longacre** is in charge of operational engineering and the meter and relay division. .

• **Frank F. Fitts,** administrative officer of the Bonneville Power Administration at Seattle, has retired after more than 20 years with the agency. He holds the Interior Department gold medal for distinguished service, one of four Bonneville officials to receive this award.

• **P. H. Butterfield** has been made operating manager of the San Diego branch of Graybar Electric Co. He joined the organization in 1940; was with the Marine Corps from 1944 to 1945, when he returned to Graybar as salesman.

• **Peter N. Tugman** has been named editor of Pacific Power & Light Co.'s *Bulletin,* succeeding **Ray Stevens,** resigned. He had been in the company's advertising and sales departments in Vancouver and Yakima.



BEING BUILT TO BEAT NOISE

Workmen are putting the finishing touches on a new million-dollar tool to help rid transformers of objectionable noise. The new General Electric Sound Laboratory—56 feet wide, 66 feet long and 49 feet high—will be large enough to test any power transformer anticipated within the next decade.

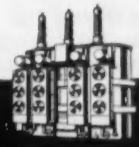
Sound-absorbing pattern shown above is made by 28-inch wedges of fiberglass. The 4½ foot thick walls also consist of concrete, masonry, copper shielding to keep out radio waves and a sound-absorbing-air space.

Located at Pittsfield, Mass., this new anechoic sound chamber will help pinpoint the causes of transformer noise more thoroughly than ever possible before and will aid our research engineers in their quest to lower noise levels without increasing costs to the user. General Electric Company, Schenectady 5, New York.

421-22

Progress Is Our Most Important Product

GENERAL ELECTRIC



Power Transformer NEWS

With factories in Anaheim, Los Angeles, Oakland, Ontario, San Francisco, San Jose, Seattle, and Richland, and Sales Offices in twenty Western cities.

• **Glenn Koger** has been appointed manager of the Torrance, Calif., plant of the Rome Cable Corp. **Gilbert Woodill,** who has been acting manager of the plant for several months, has been elected assistant treasurer. Before joining Rome in March 1954, Koger had been with General Electric Co. for 19 years and with Walker Bros., makers of electrical construction materials, for six years. During the Korean war he served as a member of the National Advisory Committee of the Insulated Wire Industry, working with NPA and OPS.

• **A. M. Mitrovich** has been appointed district manager of Rome Cable Corp.'s Seattle sales district, covering the states of Oregon and Washington. He had been sales representative in Oregon for three years.

• **A. Clifford Tyler,** assistant manager of City Light's commercial division at Seattle since 1950, has been promoted to division manager, a position which had been vacant since the appointment of **P. C. Spowart as** assistant superintendent two and one-half years ago. He joined the department as a junior clerk in 1935, since has served as electric appliance salesman, contact agent and senior contact agent.

• **Charles M. Coleman,** member of Pacific Gas & Electric Co.'s advertising and publicity staffs for the past 21 years, resigned recently. Before becoming a special writer and historian for the utility, Coleman served Hearst newspapers for 23 years. He was city editor of the San Francisco *Examiner*, Seattle *Post-Intelligencer* and Los Angeles *Examiner* and of the San Francisco *Chronicle*.

• **A. A. Charonnat** retired as superintendent of stores in charge of Pacific Gas and Electric's central warehouse in Emeryville and substores throughout the service area, July 1. His successor is **Warren N. Fairlee.**

• **Frank Fetter** has retired as Half Moon Bay local manager for PG and E after 43 years of service. **Joseph O. Richards** will succeed him.

• **Monty M. Peeler,** assistant manager of the power service department of the Salt River Power District, was promoted to manager, succeeding **Robert T. Harrell,** resigned.

• **Nicholas M. Veinmiller,** Bonneville Dam power plant operator foreman, has been appointed Lookout Point project power house superintendent. Veinmiller first went to work for the Corps of Engineers in December 1936.

Koger

• **Harvey P. McPhail,** who supervised electrical designs for Hoover, Grand Coulee and Shasta Dams, will retire July 31 as assistant commissioner of the U. S. Bureau of Reclamation. He will become a power consultant for Kuljin Corp., Philadelphia consulting engineers. McPhail has been in charge of power and irrigation since his appointment in February 1952 as assistant commissioner. In 1953 the Department of Interior awarded him a citation for distinguished service in formulating the agency's power program.

• **L. B. Gay** has been appointed manager of the Denver district of Allis-Chalmers general machinery division. He succeeds **Paul R. Pollock,** who has been named mid-Atlantic regional representative with headquarters in Philadelphia. Gay was transferred from New Orleans, where he had been since 1946. He joined the company in 1940.

• **Hatfield Chilson,** past president of the Colorado Bar Assn., was appointed to the policy-making position of attorney for the Colorado Water Conservation Board, succeeding **Jean S. Breitenstein,** newly appointed U. S. district judge. Chilson is a director of the Northern Colorado Water Conservancy District.

• **C. E. Hockings,** assistant to the president of Tucson Gas, Electric Light & Power Co. at Tucson, Ariz., has been elected a director to fill a vacancy caused by death of J. H. Saunders.

• **R. B. Grant** has been made Los Angeles branch manager for Minneapolis-Honeywell Regulator Co. Since 1949 he had been regional industrial manager for the Pacific region. He has been with Honeywell for 14 years.

• **Arthur A. Gingell,** it was announced by United States Rubber Co., will assume the responsibility formerly held by the late Fred D. Benz as U. S. Rubber sales agent for the electrical wire and cable department of the mechanical goods division. He was formerly in the Cleveland office and has been with U. S. Rubber since 1941. In 1944 and 1945 he was on special assignment for the Army Air Corps at the company's Los Angeles plant.

• **Norman D. Ferguson** succeeds **V. R. Knight** as president of California Electric Works in San Diego. Knight retains financial interest and continues on the board. Ferguson was formerly vice-president and sales manager. **Richard Becker,** vice-president and secretary, was named general manager and **Jack Knight** was re-elected vice-president. The officers and **Albert Fibiger** are directors. Ferguson, native of Arizona, joined the Calewo in 1935 and became a partner in 1940.

• **Verne Gongwer** has returned to Tacoma from California to act as consultant on a project he was instrumental in originating. He will review studies and surveys he made in 1932-33 on the possibility of building a dam on the south fork of the Snohomish River. now under consideration by the Tacoma Public Utilities Board. Gongwer was with Tacoma City Light in 1922-34 and in 1940-46, designing Cushman No. 2 generating plant and other projects.

• **Fred W. Bowdon,** head of the electrical engineering department at California State Polytechnic College, was selected to participate in the General Electric Co. professors' conference that was held June 28-July 29 in New York. Each year G-E selects 25 engineering faculty members to be guests of the company for a five-week period.

• **Orland C. Mayer** was recently elected a vice-president for the Western area of the National Society of Professional Engineers. He is director of industrial development at Idaho Power Co., Boise.

• **R. H. Thomas** has been named as new assistant line superintendent for Southern Colorado Power Co.. He originally started with Mountain States Power Co. at Douglas in 1929 and joined Southern Colorado Power 18 years ago.

• **John S. Runkle,** who was connected with the Public Utilities Commission of Hawaii from April 1948 and since 1950 was its executive secretary, has resigned to return to the mainland.

ELECTRICAL WEST...

1 Current Trends

Western electric market potentials are assured —the 11 Western States will continue to perform well ahead of the rest of the U.S.

Expenditures by utilities for new electrical facilities in the West will be over $750,000,000 a year. Here's a sample of what this means for 1955:

KW of new capacity	2,216,950
Miles of transmission	5,510
Miles of distribution	7,800
Kva—substations	8,170,000

Add to this the millions of dollars worth of utilization equipment and the annual growth of the Western electrical market looms large indeed. This annual growth is the same as duplicating the entire Southern California Edison system and all the load-consuming devices on its lines!

2 Basic Statistics

There are 208 electric service systems in the 11 Western States. They have 18% of the country's generating capacity, but produce over 20% of the energy consumed. In 1954 they are building 23% of the country's new transmission lines, over 17% of primary distribution lines, and about 18% of the substations.

About 225 electrical wholesale houses supply 16% of the country's electrical contractors in the West. A growing electrical manufacturing industry provides locally made equipment to utilities, contractors, wholesalers and general industry.

More than 25% of the 1,075,000 non-farm housing units started in 1953 were in the 11 Western States. For 1954 and the next several years starts are expected to be within 10% of this figure.

3 What this Market Buys

Everything a utility needs to generate, transmit, distribute and sell electrical energy, plus design, construction and maintenance services—over $750,000,000 worth a year.

Every kind of electrical construction equipment needed in industrial, commercial and residential construction, including built-in devices such as lighting, electric heating, etc.

Power consuming equipment sold through electrical and appliance wholesalers—everything from motors to traffic appliances.

4 How this Market Buys

Utilities mostly buy direct from manufacturers who sell with their own sales forces or through representatives. In the West this latter practice has been most often the case, although as the Western market has grown more and more manufacturers are establishing their own plants and sales offices on the Coast.

Electrical construction material normally passes from manufacturers through electrical wholesale houses—then to contractors who buy and install equipment used in residential, commercial and most industrial construction.

In the West this distribution pattern sprawls over 40% of the land area of the U.S. Advertising and other printed sales material plays a most influential part in selling in the 11 Western States.

5 Available Market Data

ELECTRICAL WEST has available current "Buying Power Surveys," a Fingertip Data Booklet, and statistical summaries from the Annual Review and Forecast issue. We maintain a Directory of Western offices and Sales Representatives of electrical manufacturers, a Western "Where-to-Buy" product directory, a Directory of Electrical Manufacturers' Representatives, and a Directory of Western Appliance Service and Repair Parts.

6 Electrical West Serves the Market

ELECTRICAL WEST has served the electrical industry in the 11 Western States for 68 years. A McGraw-Hill publication, member of ABC and ABP. Circulation (6/30/54):

Utilities	6,096
Contractors	1,212
Wholesalers, Dealers	664
Consultants, Engineers	635
Manufacturers and others	1,825

ELECTRICAL WEST has twice as many utility subscribers in its area as does the leading national publication. It has one or more subscribers in more than 220 wholesale houses. Contractor circulation is concentrated among those employing 4 or more people.

Western electrical developments continuously provide ELECTRICAL WEST's top-flight editorial staff with outstanding technical articles. This means exclusive articles and "scoops" that assure high readership.

Independent readership surveys consistently show ELECTRICAL WEST equal to or ahead of national magazines in this area.

7 Electrical Advertisers Use Electrical West

Over 250 manufacturers of electrical equipment, apparatus and supplies ran a total of 1236 pages of advertising in ELECTRICAL WEST during 1953. They know that

"It's not hard to sell in the West—
But it's worth Selling hard."

ELECTRICAL WEST

A McGRAW-HILL PUBLICATION

68 POST STREET ..... SAN FRANCISCO 4, CALIFORNIA
T. H. CARMODY, R. C. ALCORN

520 NORTH MICHIGAN AVENUE ..... CHICAGO 11, ILLINOIS
M. I. O'CONNELL

330 WEST 42ND STREET ..... NEW YORK CITY 36, N. Y.
WALTER KLEIN

1111 WILSHIRE BLVD. ..... LOS ANGELES 17, CALIFORNIA
CARL DYSINGER

KNOB and TUBE WIRING RUNS COOL AND CARRIES GREATER LOADS FROM 33% TO 100% MORE

HOT? If you want your wiring to run **COOL,** install Knob and Tube Wiring. It's cooler—it's safer—it carries greater loads . . . from 33% to over 100% *more* than other methods. It's the answer to your adequate wiring problems. See NEC Tables I and II on conductor carrying capacities.

Specify Porcelain Products' Knobs and Tubes for better Knob and Tube Wiring.

60 years PP

Porcelain Products, Inc.
FINDLAY, OHIO

NOTES ON THE TRADE

Russians Not First With Atomic Power Plant, Executive Says

If the Russians have really built an atomic power plant, as recently claimed, it would not be the first, said A. C. Monteith, vice-president in charge of engineering and research, Westinghouse Electric Corp., at a recent San Francisco press conference. We have been producing a very substantial amount of power from the Mark I reactor at Arco, Idaho, for more than a year, he said.

However, there is a terrific development job yet to be done to make atomic power an economic tool. This first 60,000-kw nuclear plant to be built at Shippingport, Pa., for Duquesne Light Co., will not be an economic plant according to Monteith, but is expected to provide the blueprint from which an economic plant can be built. This first plant will cost $40,000,000 as compared with about $13,000,000 for an ordinary steam plant of comparable size.

"We have only ourselves to blame for the public impression that atomic power means initial low-cost power," he said. Engineering must work on an orderly and progressive basis, he continued. "There is a vast amount of development work lying between us and an economical design." Reactor design, what metals to use, and corrosion are the big problems, as he views the situation.

Efforts are still being made to increase efficiency of conventional plants. Westinghouse has completed design for a 5,000-psi, 1,115-F boiler with two stages of reheat at 1,050 F, he said. This will drive a 200- to 250-mw turbogenerator as a minimum size for best efficiency.

• **Advancement** by Youngstown Sheet & Tube Co. of two former Westerners has been announced. **John P. DeHetre,** who joined the organization as assistant field engineer in Los Angeles, has been made assistant general manager of sales at the home office. **Charles T. McClure,** who began with Youngstown Steel Products Co. of California, a subsidiary, as field engineer, has been named manager of Oil County tubular sales.

• **Turner Metal Supply Co.,** 2314 Laura Ave., Huntington Park, Calif., has been appointed a distributor of Reynolds aluminum.

LIGHTER!
SMALLER!
MORE EFFICIENT!

★

PENNSYLVANIA
POLE STAR
TRANSFORMERS

now available in every distribution size

3 through 500 kva
480 volts through
67,000 volts

In new installations or replacements, Pole Star Transformers are ideally suited to today's distribution needs. They are smaller, lighter, more efficient . . . embodying a patented lapped core that takes full advantage of the outstanding flux-carrying capacity of cold-reduced, oriented electrical steel.

J. G. CORRIN
510 W. 6th St., Los Angeles 14
VAndike 0830

GEO. E. HONN CO.
420 Market Street, San Francisco
SUtter 1-7252

ELECTRICAL ENGINEER

M.S.E.E., registered P.E., now working in the East, 14 years experience in design, construction supervision, power, controls and lighting, also administration and client relations. Seeks responsible position, preferred location Northern California. **Box 282, Electrical West, 68 Post St., San Francisco 4, Calif.**

WANTED

MANUFACTURERS AGENCY in Honolulu, T. H., and in Billings, Missoula, Helena or Butte, Montana for old well known manufacturer of staple electrical supply line distributed through electrical wholesalers. Write Box 283, care of Electrical West, San Francisco 4, Calif.

• **Hubbard** & Co.'s West Coast operations are to be expanded to include new products germane to this market according to Charles Dyson, who with a group of associates has just purchased control of the company. Dyson, who is the new chairman of the board, and James Knowles, president of Hubbard, were visiting on the coast late last month following the purchase. Purpose was to develop future plans with Marshall Lasher, Hubbard's Pacific Coast vice-president.

• **Federal Electric Products** Co. has changed its name to Federal Pacific Electric Co., it was announced by T. M. Cole, president. The change followed merger of Federal with its wholly owned subsidiary, Pacific Electric Mfg. Corp., on July 1, a step taken by managements of the two companies to secure operating economies and to integrate sales and business activities, he said.

• **A 30% expansion** of plant area has been announced by Western Insulated Wire Co. The Los Angeles factory will use this additional space for rubber mixing operations and for finished product warehouse space. Bronco cables will be made under one roof and additional warehousing facilities will mean that a large stock can be maintained continuously, it was stated. The company was established in 1937 by Edward H. Lewis.

• **Crippen Wright Engineering Ltd.** has been organized as an independent engineering firm at Vancouver, B. C. **Glen E. Crippen** is head of the company which will have its main office in Vancouver, but will operate across Canada in conjunction with the Canadian subsidiary of Ewbank & Partners Ltd. Crippen was formerly chief designing engineer of the B. C. International Engineering Company and was responsible for designing the Kemano power project of the Aluminum Co. of Canada.

• **J. H. Shoemaker** has been appointed field sales representative for the G-E Air Conditioning Division's Western region, with headquarters in San Francisco. He will represent the company in sales of home heating and cooling equipment in California, with the exception of Los Angeles, Arizona and Nevada.

• **John G. Corrin,** manufacturer's representative, has moved to 510 W. Sixth St., Los Angeles 14. Among the companies he serves are Meter Devices Co. and Pennsylvania Transformer Co.

• **John R. Foster** has been appointed sales and service manager of Advance Electric & Relay Co., Burbank, Calif.

Overhanging branches removed and trees shaped properly for Utility in Beverly Hills

SURGICAL LINE CLEARANCE BY DAVEY

Davey is doing line clearing for 12 Public Utilities on the Pacific Coast —most of them served continuously for over 20 years. Davey specialized equipment and efficient methods save money . . . Davey surgical pruning benefits trees—builds goodwill.

DAVEY LINE CLEARING
DIVISION OF
DAVEY TREE SURGERY CO., LTD. OF CALIFORNIA
Russ Bldg., San Francisco, SUtter 1-3377
Story Bldg., Los Angeles, TUcker 1929

Sherman® Wedge-Grip CONNECTORS

SC-12X, SC-6 and SC-6X have extra reinforcing plate for additional thread strength.

SAVE YOU 50% IN COST!

THEY'RE SOLDERLESS . . . V CORRUGATIONS CLAMP WIRES SECURELY . . . HAVE NO SEPARATE PARTS . . . REQUIRE ONLY SCREWDRIVER, WRENCH OR PLIERS TO INSTALL!

PART NO.		B & S WIRE	
Plain Screw	Hex. Head Screw	Max.	Min.
SC-6	SC-12X	2-12 Solid	2-20
		2-6 Strand	2-12
	SC-6X	2-6 Strand	2-12
	SC-6X549	2-6 Strand	2-10
	SC-4X	2-4 Strand	2-8
	SC-2X	2-2 Strand	2-4

On many connections where you have made a slow, bothersome soldered splice or used more expensive connectors you can use "Wedge-Grips." These handy connectors help you stretch labor hours and keep costs down. Made of pure, high conductivity, hard drawn copper with bronze screws.

H.B. Sherman MANUFACTURING CO
BATTLE CREEK, MICH.
ELECTRICAL FITTINGS FOR WIRE and CABLE

INDEX TO ADVERTISERS
August 1954

Allis-Chalmers Mfg. Co....4, 5, 13, 42, 43, 53
American Steel & Wire Div.....30, 31
American Tel & Tel Co..... 14
Anaconda Wire & Cable Co.....112, 113
Automatic Switch Co.....117

Brewer-Titchener Corp. 38, 39
Briegel Method Tool Company..... 19
Burton Equipment Co., Inc..... 50

Chance Company, A. B.....105
Classified 128
Cole Electric Co.....132
Condon Co., Earl S.....116
Corrin, J. G.....128

Davey Tree Surgery.....129
Day-Brite Lighting, Inc.....121

Electrical West 127
Everstick Anchor Co.....122

Fisher-Pierce Company 15

G & W Electric Specialty Co..... 27
Gadney Electric Co..... 51
General Electric Co.:
Schenectady Apparatus Div.....8, 9, 54,
.....106, 107, 125
Graybar Electric Co., Inc..... 22

Hill Transformer Co.....122
Hunn Co., George E.....128

Indiana Steel & Wire Co.....116

Jeffries Transformer Co..... 32
Johns-Manville 109

Kaiser Engineers 110
Kearney Corp., James R..... 7
KPF Electric Company..... 45

Line Material Co.....3, 34, 35
Locke Department General Electric Co...30, 21

Motor Devices 122
Maloney Electric Co.....115

New England Mica Co.....116

Ohio Carbon Co..... 48
Orangeburg Mfg. Co., Inc..... 6

Pacific Coast Elec'l. Assoc.....4th Cover
Pacific Electric Mfg. Corp.....111
Pacific Gas and Electric Co.....3rd Cover
Phelps Dodge Copper Products Corp....10, 11
Porcelain Products, Inc.....128

RLM Standards Institute..... 41
Rome Cable Corp.....102, 103

Sangamo Electric Company..... 29
S & C Electric Company.....24, 25
Shell Oil Company.....131
Sherman Mfg. Co., H.B.....129
Simplex Wire & Cable Co..... 37
Smith Company, S. Morgan..... 26
Smoot-Holman Co. 1
Soapstone Duct Co.....119
Southern California Edison Co.....2nd Cover
Standard Oil Company..... 33
Steel City Electric Co..... 49
Sunbeam Lighting Company..... 23
Sylvania Electric Products, Inc..... 12

Tel-E-Loct Products, Inc.....123

United States Rubber Co..... 47
United States Steel Corp.....30, 31

Wagner Electric Corp.....16, 17
Western Insulated Wire Co..... 44
Westinghouse Electric Corp....89, 90, 91, 92,
.....93, 94, 95, 96, 97, 98, 99, 100
Wiremold Company 122

Youngstown Sheet & Tube Company..... 18

PROFILES

Gardner

Smalley

Reid Gardner is president and Dunlap D. Smalley is vice-president of the Southern Nevada Power Co., which recently announced reorganization. Gardner is a former president of Arizona Edison; Smalley recently retired as vice-president and assistant general manager of PG and E

Goold

Hill

Rolly Goold of Stockton was presented a watch in appreciation of his long service as chairman of the California Conference of NECA Chapters by Sid Hill of Los Angeles at the conference in Reno. Goold is one of northern California's pioneers in the electrical contracting business

Donald E. Rice has been named general superintendent, Pittsburg, Calif., Works, Columbia-Geneva Division of U. S. Steel

Paul F. Ewing, former Oregonian reporter on power, has been made special assistant to the Bonneville Power Administrator

Rice

Ewing

The smallest thing in your turbine

...yet it can cost you $5000 an hour

You can hardly see it here. You'll probably never see it in your turbine. It's a tiny spot of rust.

But let it grow big enough to flake off into your turbine's lubricating system, and it may knock out the governor.

Then you're in for trouble. Trouble that can cost up to $5000 an hour in shutdown costs and lost revenues. Many recorded case histories prove this.

But, this needn't happen to you—if you use Shell Turbo Oil. For this unusual oil contains the *most effective rust inhibitor yet devised!*

Test after test has proved that no other turbine oil is so effective in preventing rust—*even in the presence of salt water!* In one installation, for example, the original charge of Shell Turbo Oil has been in use since 1940!

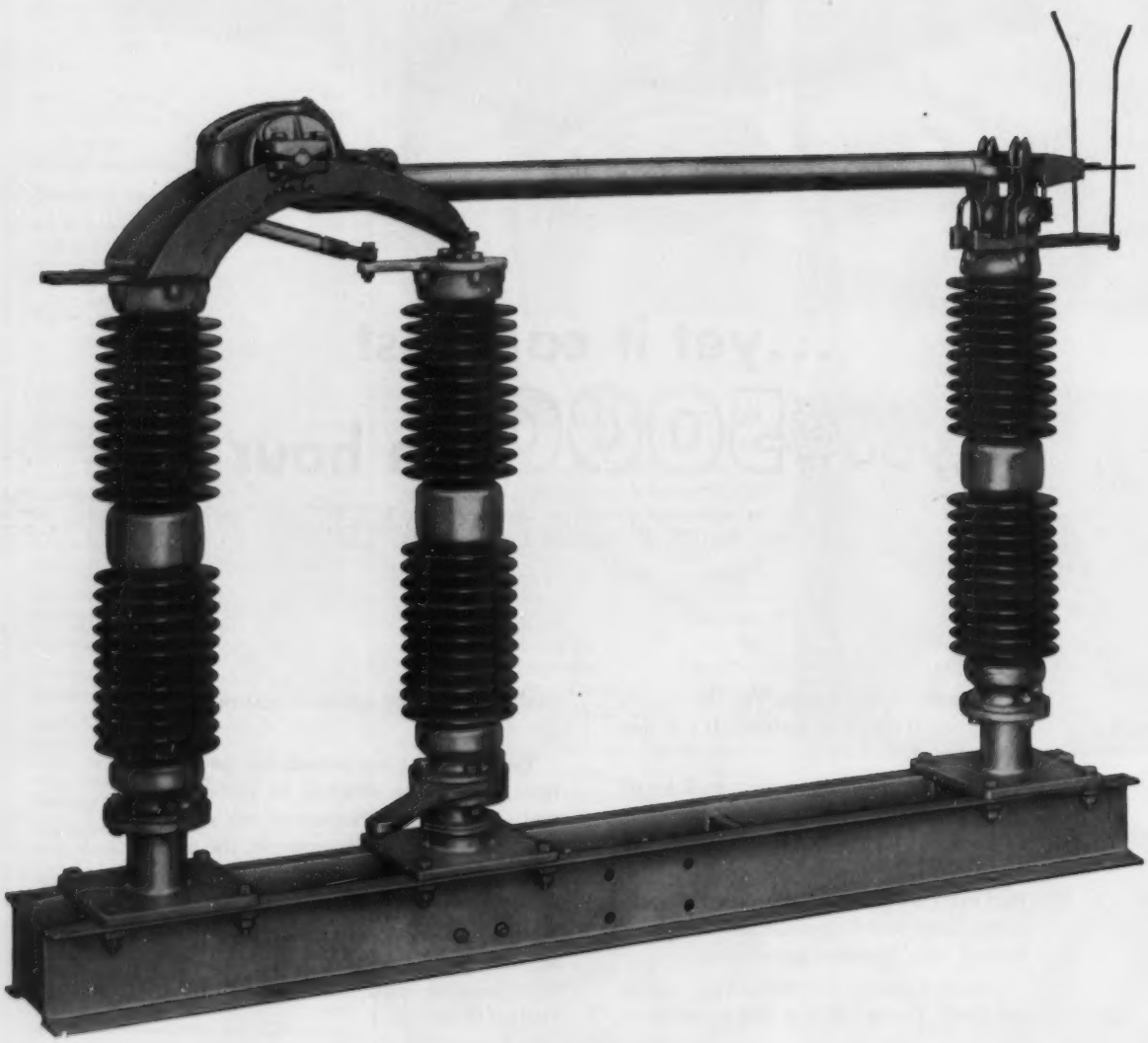
So make sure your turbines are protected from costly rust. See your Shell representative about rust inhibited Shell Turbo Oil today.

SHELL®

***Stop rust now before it's big enough to stop you...with* SHELL TURBO OIL**

Cole Electric Co.

8438 Steller Drive TExas 0-4701 Culver City, Calif.



AIR BREAK DISCONNECTING SWITCH
69,000 Volts—1200 Amperes
Type 0-2
Vertical Break, Three Pole, Single Throw
Group Operated—One Pole Shown
HIGH PRESSURE SILVER TO SILVER CONTACTS
See Bulletin 46-A

Year-round air conditioning does three big jobs that can help raise your plant's output: 1) It regulates temperature. 2) It controls humidity. 3) It filters the air. You get an endless supply of fresh, clean, conditioned air that helps protect machinery and materials from excessive heat and moisture, and from dust, dirt, and unwanted odors. Result: Fewer mechanical breakdowns, less waste of materials . . . and more and better work from employees, too. Saleable output goes up.

Why not look into the advantages of year-round air conditioning today? It's a good bet the benefits to your business—measured in dollars and cents alone—will more than repay every penny you invest. There are many models to choose from—gas or electric units for heating or cooling . . . electric heat pumps that do both jobs. And with P. G. and E.'s low rates, the one you pick will be cheap to operate.

P·G and E·

Pacific Gas and Electric Company

For air conditioning advice, contact your consulting engineer, contractor, or local P. G. and E. office

MEET A LIVE WIRE!

• *Leslie A. Hicks*

for 26 years an active member of the Pacific Coast Electrical Association, currently is serving his fifth term as a Vice President of the Association and his third term as a PCEA Director.

Maine-born Hicks, a resident of the Hawaiian Islands since 1908, graduated from the University of Hawaii as a civil engineer and spent two years in the field artillery during World War I. He joined The Hawaiian Electric Company, Ltd. in 1919 as assistant to the Chief Engineer, later advancing to Chief Engineer, Director and Treasurer, General Manager, Vice President, and in 1943 became President of the company.

NO matter where *you* live — whether it's in the Hawaiian Islands, California, Arizona, Nevada, or even out in the Philippines — *you*, too, can join PCEA and start making a name for yourself! As a matter of fact, where you're *from* is less important than where you're *going!* If your plans call for a steady climb up the ladder of business success, then our recommendation is to join PCEA — the trade association that can provide you with plenty of opportunities to show others what you can do. PCEA's more than 4,200 members from 286 different companies and all branches of the electric industry have accomplished a great deal, but a lot remains to be done. Your industry — your company — and *you* — will benefit by joining us in PCEA.

Pacific Coast Electrical Association

530 W. Sixth Street, Los Angeles 14, California
681 Market Street, San Francisco 5, California